BASE SUPPORT BUILDING AND KENNEDY ATHLETIC, RECREATION, AND SOCIAL PARK II
SWMU 014 AND SWMU 118
PFAS SITE ASSESSMENT PROGRESS REPORT
KENNEDY SPACE CENTER, FLORIDA

Prepared for:



National Aeronautics and Space Administration
Kennedy Space Center, Florida

January 2023
Revision 0

Prepared by:

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BASE SUPPORT BUILDING SWMU 014 AND KENNEDY ATHLETIC, RECREATION, AND SOCIAL PARK II SWMU 118

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(REVISION 0)

KENNEDY SPACE CENTER, FLORIDA

Prepared for:
Environmental Assurance Branch
National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, FL 32899

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January 2023

I hereby certify that in my professional judgment this document entitled: *Base Support Building and Kennedy Athletic, Recreation, and Social Park II SWMU 014 and SWMU 118, PFAS Site Assessment Progress Report, Revision 0,* satisfies the requirements set forth in Chapter 471, Florida Statutes. I have completed and have been in responsible charge of work completed by qualified professionals working directly under my supervision and the applicable portions of this document and associated work comply with Chapter 62-780, Florida Administrative Code (FAC) and Rule 62-780.400(1), FAC.

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Date: 27 January 2023



This item has been electronically signed and sealed by Richard G. Smith using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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LIST OF ABBREVIATIONS AND ACRONYMS

ft	feet
mg/kg	milligrams per kilogram
ng/L	nanograms per liter
6:2 FTS	6:2 Fluorotelomer sulfonate
ADP	Advanced Data Package
AFFF	Aqueous Film Forming Form
bgs	below ground surface
DPT	direct-push technology
FDEP	Florida Department of Environmental Protection
GCTL	groundwater cleanup target level
GenX	Hexafluoropropylene oxide dimer acid
GSA	Government Services Administration
HDPE	high density polyethylene
HGL	HydroGeoLogic, Inc.
IDW	investigation-derived waste
KARS	Kennedy Athletic, Recreation, and Social
KSC	Kennedy Space Center
KSCRT	Kennedy Space Center Remediation Team
LOC	Locations of Concern
NASA	National Aeronautics and Space Administration
NMeFOSAA	N-methylperfluorooctanesulfonamidoacetic acid
PAH	polynuclear aromatic hydrocarbon
PFAS	perfluoroalkyl and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	Perfluorodecanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	Perfluorooctanesulfonamide
pGCTL	provisional groundwater cleanup target level

LIST OF ABBREVIATIONS AND ACRONYMS

RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
SAPR	Site Assessment Progress Report
SCTL	soil cleanup target level
SGS	SGS North American Inc.
SL	screening level
SOP	Standard Operating Procedure
SW	surface water
SWMU	Solid Waste Management Unit
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Site Assessment Progress Report (SAPR) presents the findings of the 2022 PFAS investigation conducted from February 2022 through June 2022 at the Base Support Building (previously known as the Maintenance and Operation Building), Solid Waste Management Unit (SWMU) 014, and at the Kennedy Athletic, Recreation, and Social (KARS) Park II, (SWMU 118) located within Kennedy Space Center (KSC), Florida. SWMUs 014 and 118 were investigated independently, however, the results of the investigations indicated a single PFAS groundwater plume covering both SWMUs, so the two sites are being reported together.

The Base Support Building was constructed in 1964 and has been used to support space flight efforts including painting, carpentry, electrical work, vehicle and heavy equipment maintenance, fuel storage and dispensing, metal work, steam cleaning, and battery maintenance and storage. All KSC air rescue firefighting vehicles were maintained at the Base Support Building.

Multiple environmental assessments have been performed at SWMU 014, including underground storage tank removals, and soil, groundwater, surface water and sediment sampling for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and metals. No active remediation has been performed at the SWMU 014. SWMU 014 is currently being monitored in the KSC Industrial Area Long-Term Monitoring Program.

On November 2, 2006, a spill of Aqueous Film Forming Form (AFFF) was reported to have occurred at the south tarmac of SWMU 014. The discharge occurred during maintenance on the plumbing of a fire engine. The discharge was reported to be approximately 20 gallons and was contained on the pavement with spill socks and booms. During confirmation sampling for a 2019 KSC-wide PFAS assessment, perfluorooctanesulfonic acid (PFOS) and/or perfluorooctanoic acid (PFOA) concentrations were detected in groundwater and surface water samples above the Florida Department of Environmental Protection (FDEP) provisional groundwater cleanup target level (pGCTL) and surface water (SW) screening level (SL) throughout the Western Industrial Area, including at two locations where PFOS concentrations were greater than 10,000 nanograms per liter (ng/L).

KARS Park II was developed as a recreational facility beginning in the late 1980s through 1990 and has been used to stage construction materials (including two borrow pits used for road construction) and waste containers. Previously, KARS Park II contained underground storage tanks.

AFFF was reportedly spilled at KARS Park II on May 17, 1993. The location and volume of the spill are unknown. During sampling for the KSC-wide PFAS assessment, PFOS concentrations were detected in groundwater and surface water samples above the pGCTL and SW SL throughout the northern portion of KARS Park II, including one location where PFOS concentrations exceeded 10,000 ng/L.

Based upon these detections additional assessment was recommended for groundwater and surface water at SWMU 014 and SWMU 118. Objectives of the PFAS investigation were modified as

regulations evolved. The initial objectives of the 2022 investigation were to delineate PFOA and PFOS laterally and vertically to the pGCTL (70 ng/L separately or combined based on the U.S. Environmental Protection Agency (USEPA) lifetime health advisory levels issued in 2016) and to develop a general understanding of the SW and groundwater interactions at KSC. The objective of the groundwater investigation was changed by KSC to delineating PFAS compounds in groundwater to the SW SL of 10 ng/L for PFOS in April 2022. In June 2022, the objective of the groundwater investigation was changed again by KSC to delineating to the USEPA Regional Screening Levels (RSLs) of 4 ng/L for PFOS; 6 ng/L for PFOA, perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (GenX); 39 ng/L for perfluorohexanesulfonic acid (PFHxS); and 601 ng/L for perfluorobutanesulfonic acid (PFBS).

Site assessment field activities were conducted at SWMU 014 and SWMU 118 between February 2022 and June 2022. This included the collection of 116 direct-push technology (DPT) groundwater samples from 22 locations, 13 SW samples from 11 locations, and two borings for lithologic logging to a depth of 60 feet (ft) below ground surface (bgs) at SWMU 014; and 64 DPT groundwater samples from 14 locations, 22 SW samples from 8 locations, and one lithologic boring to a depth of 60 ft bgs at SWMU 118. All groundwater and SW samples were analyzed for the 25 PFAS analytes by USEPA Method 537. Groundwater results were compared to the most recent RSLs published by USEPA for residential tap water (USEPA, 2022a) to determine the extent of PFAS contamination at SWMU 014 and SWMU 118 for six PFAS analytes (PFOA, PFNA, PFBS, PFHxS, PFOS, and GenX). SW results were compared to the FDEP SW SLs (FDEP, 2020) for PFOA and PFOS.

The PFAS investigation concluded that groundwater exceeding RSLs extends north to approximately National Aeronautics and Space Administration (NASA) Parkway, east to approximately C Avenue (where PFAS impacts comingle with neighboring PFAS impacts at SWMUs 116 and 117), south to approximately 5th Street SE, and west along NASA Parkway to at least the visitor center and within the solar farm. The extent of PFAS impacts has been approximated to the west, northeast, south, and east where samples below the RSLs do not fully bound SWMU 014 and SWMU 118. The PFAS contamination boundary between SWMU 014 and SWMUs 116 and 117 is not defined by groundwater samples below the RSLs. The plumes are comingled and will continue to be investigated and refined at a regional scale.

In the SW samples collected, 13 of the 25 PFAS analytes were detected at SWMU 014 sampling locations. Of the 13 detected PFAS analytes, 10 were detected in all 13 SW samples. All 13 SW samples exceeded the SW SL for PFOS. No samples exceeded the SW SL for PFOA. In SW samples collected from SWMU 118, 11 of 25 PFAS analytes were detected with PFBA and PFOS detected in all 22 SW samples. PFOS exceeded the SW SL in 21 of 22 samples and PFOA did not exceed the SW SL at any sample location. Further assessment and sampling are required to better understand the interaction between groundwater and surface water at SWMU 014 and 118.

A brief summary of the number of samples collected, number of detections, number of detections exceeding RSLs, and number of detection limits exceeding RSLs by media for both SWMU 014 and SWMU 118 is provided below:

Parameter	PFOA	PFNA	PFBS	PFHxS	PFOS	GenX
Groundwater DPT (RSLs shown in ng/L)	6	6	601	39	4	6
Number of Samples	180	180	180	180	180	180
Number of Detections	88	20	64	112	110	0
Number of Detections Exceeding RSL	53	12	4	44	95	0
Number of Detection Limits Exceeding RSL	4	4	0	0	25	180
Surface Water (SW SLs shown in ng/L)	500	N/A	N/A	N/A	10	N/A
Number of Samples	35	35	35	35	35	35
Number of Detections	34	11	34	34	35	0
Number of Detections Exceeding SW SL	0	N/A	N/A	N/A	34	N/A
Number of Detection Limits Exceeding RSL	0	N/A	N/A	N/A	0	N/A

Additional DPT sample locations are required to delineate PFAS from SWMU 014 and SWMU 118 to the USEPA RSLs in groundwater. DPT groundwater samples should be collected to the west, northeast, and south of the identified PFAS groundwater plume. To understand potential discharges and any seasonal groundwater flow variations, monitoring well pairs should be installed with a subset sampled quarterly. Locations for monitoring wells should be located to track the predicted movement of the plume from source areas near the Base Support Building to the north/northwest. Additional monitoring wells should be installed to more accurately determine groundwater flow directions for shallow (water table) groundwater and deeper groundwater near the estuarine clay.

Furthermore, SW samples should be collected quarterly from select locations to pair with nearby groundwater sampling to determine if PFAS discharge to SW can be identified at SWMU 014 or SWMU 118. Staff gauges should be installed to determine SW flow and flow directions in select ditches around SWMU 014 and SWMU 118.

The results and path forward were presented to the KSC Remediation Team (KSCRT) in October 2022 (Meeting Minute 2210-M10). The draft meeting minutes are included in Appendix A.

1. INTRODUCTION

This Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Site Assessment Progress Report (SAPR) presents the findings from the 2022 investigation activities, completed between February 22, 2022, and June 22, 2022, at the Base Support Building (previously known as the Maintenance and Operation Building), Solid Waste Management Unit (SWMU) 014 and at the Kennedy Athletic, Recreation, and Social (KARS) Park II SWMU 118 located within Kennedy Space Center (KSC), Florida. SWMUs 014 and 118 were investigated independently, however, the results of the investigations indicated a single PFAS groundwater plume covering both SWMUs, so the two sites are being reported together.

KSC is located on the northern portion of Merritt Island, between the Indian and Banana River Lagoons in Brevard County, Florida. During a 2019 KSC-wide PFAS site assessment, perfluorooctanesulfonic acid (PFOS) concentrations were detected at concentrations greater than 10,000 nanograms per liter (ng/L) at both SWMU 014 and SWMU 118. As a result, additional investigations were recommended (GeoSyntec, 2019). During the 2021-2022 Site Assessment, one hundred sixteen (116) direct-push technology (DPT) groundwater samples were collected from 22 locations and 13 surface water (SW) samples were collected from 11 locations at SWMU 014; and 64 DPT groundwater samples were collected from 11 locations and 22 SW samples were collected from 8 locations at SWMU 118. Two borings at SWMU 014 and one boring at SWMU 118 were advanced for lithologic descriptions. This PFAS SAPR was prepared by HydroGeoLogic, Inc. (HGL) for the National Aeronautics and Space Administration (NASA) under Task Order 4 of Indefinite Delivery Indefinite Quantity Contract 80KSC019D0012, Task Order 80KSC021F0168.

1.1 Overview

This document presents a summary of activities completed between February 22, 2022, and June 22, 2022, at SWMU 014 and SWMU 118, located at KSC, Florida. The activities conducted at both SWMU 014 and SWMU 118 included:

- Advancing soil borings for lithologic descriptions;
- DPT groundwater investigation; and
- SW sampling investigation.

The Base Support Building was designated SWMU 014 and KARS Park II was designated as SWMU 118 under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program. KSC's operating permit (0026028-009-HO) issued by the Florida Department of Environmental Protection (FDEP) under the Hazardous and Solid Waste Amendment portion of RCRA requires KSC to investigate all known SWMUs and Locations of Concern (LOC) at KSC.

An Advanced Data Package (ADP) with the elements of this report for SWMU 014 and SWMU 118 (KARS Park II) were presented to the KSC Remediation Team (KSCRT) at the October 6, 2022, KSCRT meeting. Meeting minutes are included in **Appendix A**. A copy of the PFAS SAPR ADP for SWMUs 014 and 118 is provided in **Appendix B**.

1.2 Purpose

This PFAS SAPR presents the results of the site assessment activities conducted between February 22, 2022, and June 22, 2022, at SWMU 014 and SWMU 118. Objectives of the PFAS investigation were to delineate perfluorooctanoic acid (PFOA) and PFOS laterally and vertically to the FDEP provisional groundwater cleanup target level (pGCTL) of 70 ng/L separately or combined, and to develop a general understanding of the surface water and groundwater interactions at KSC. The objective of the groundwater investigation was made more stringent by KSC due to concerns of groundwater discharging to surface water, with the revised objective to delineate PFAS compounds in groundwater to the FDEP surface water screening level (SW SL) of 10 ng/L for PFOS in April 2022. The objective of the groundwater investigation was changed again by KSC to delineate to the U.S. Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) of 4 ng/L for PFOS; 6 ng/L for PFOA, perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (GenX); 39 ng/L for perfluorohexanesulfonic acid (PFHxS); and 601 ng/L for perfluorobutanesulfonic acid (PFBS) in June 2022.

1.3 Report Organization

The remainder of this SAPR is organized as follows:

- **Section 2.0: Site Description** – This section details the site location, previous investigations and remediation, lithology, and hydrology and hydrogeology.
- **Section 3.0: PFAS Site Assessment Methodologies and Activities** – This section provides a summary of the field activities completed between February 2022 and June 2022 in support of the PFAS site assessment.
- **Section 4.0: Data Evaluation and Screening Process** – This section details a summary of the groundwater and SW results.
- **Section 5.0: Conclusion and Recommendations** – This section details the conclusion of the 2022 PFAS investigation and presents recommendations based upon the results.
- **Section 6.0: References** – This section provides a listing of the documents used in preparing this report.

2. Site Description

The Base Support Building (previously known as the Maintenance and Operations Building) and KARS Park II (SWMU 014 and SWMU 118, respectively) are located near the center of southern Merritt Island, south of NASA Parkway and on either side of Kennedy Parkway.

SWMU 014 consists of approximately 115 acres of land with numerous structures, asphalt-paved parking and driving areas, and swales that surround the site. The building was constructed in 1964 and has been used to support space flight efforts including painting, carpentry, electrical work, vehicle and heavy equipment maintenance, fuel storage and dispensing, metal work, steam cleaning, and battery maintenance and storage (GeoSyntec, 2019).

The Base Support Building's current configuration includes electrical, mechanical, carpentry, metal and paint shops; logistics and support offices; a steam cleaning facility; maintenance areas; and an oil/water separator, including its associated secondary treatment pond. The oil/water separator receives wastewater from equipment washing and stormwater runoff from the paved area west of the heavy equipment bays. All KSC air rescue firefighting vehicles were maintained at the Base Support Building.

SWMU 118 consists of approximately 268 acres of land that is largely forested and contains two large borrow pits. KARS Park II consists of recreation facilities, a restroom and associated sanitary leaching field, and a pavilion. The surface water body and areas to the south and west are designated as part of the KSC Wildlife Refuge. Historical activities included the staging of construction materials, use of two borrow pits for road construction, storage of solid waste containers and landscaping materials, and the location of former underground storage tanks (GeoSyntec, 2019).

2.1 Site Location

KSC is centrally located on the east coast of Florida, to the north and west of Cape Canaveral Space Force Station (**Figure 2-1**). It is situated in Brevard and Volusia Counties between the Merritt Island Barge Canal to the south, the town of Oak Hill to the north, the Atlantic Ocean and Cape Canaveral Space Force Station to the east, and the Indian River Lagoon to the west. A large portion of the area, between the Indian River Lagoon and the Atlantic Ocean, is in the northern part of Brevard County on Merritt Island, with the extreme north boundary extending about 7 miles into Volusia County.

SWMU 014 and SWMU 118 are located on the southern portion of KSC, at the intersection of NASA Parkway and Kennedy Parkway (**Figure 2-2**). The two sites are located within Sections 5 and 6 of Township 23S, Range 37E which is in the Orsino Quadrangle.

2.2 Previous Investigations and Remediation

A 1991 Contamination Assessment Report evaluated contamination around two former 8,000-gallon underground storage tanks at SWMU 014. Polynuclear aromatic hydrocarbons (PAHs) were detected above screening levels in compliance groundwater wells but were not detected in monitoring wells. The report recommended continued monitoring (G&E Engineering, 1991).

A 1997 SWMU Assessment Report discussed sampling at nine LOCs around SWMU 014. Soil, groundwater, sediment, and SW samples were collected from the LOCs. PFAS was not included in this sampling program. Arsenic was detected above the FDEP soil cleanup target level (SCTL). Vinyl chloride was detected above the FDEP groundwater cleanup target level (GCTL). In sediment samples, total petroleum hydrocarbons exceeded the SCTL and eight metals (arsenic, cadmium, chromium, copper, lead, zinc, mercury and nickel) exceeded screening levels. Nine metals (aluminum, arsenic, chromium, mercury, manganese, copper, iron, lead and zine) exceeded screening levels in stormwater samples collected. A RCRA Facility Investigation (RFI) was recommended (EG&G Florida, 1997).

A 2001 RFI Report for SWMU 014 discussed results for soil, sediment, SW, and groundwater investigation. The RFI concluded that non-cancer risk estimates for sediment and cancer risk estimates for soil and sediment exceeded FDEP threshold levels when using default SCTLs. However, neither cancer nor non-cancer risk estimates exceeded FDEP threshold levels when using site specific SCTLs. In addition, PAH data was compared to KSC Industrial Area reference values for large parking/heavy traffic areas. Only one PAH, dibenzo(a,h)anthracene, exceeded a large parking/heavy traffic area reference value. The non-cancer and cancer risk estimates for surface water and groundwater exceeded FDEP thresholds. However, surface water risk estimates were noted as being very conservative because of the limited exposure pathway. No unacceptable ecological risks were noted for the site (Geosyntec Consultants, 2000).

Based upon the results of the RFI, a Land Use Control Implementation Plan was approved in 2001 to limit SWMU 014 to industrial uses, prohibit the use of groundwater at the site, prohibit residential use/exposure to soil, and ensure swales remain in the current configuration (NASA, 2001). A Statement of Basis also was generated to inform the public of the findings and discuss proposed institutional controls for the site (NASA, 2000).

Groundwater contaminants of concern were benzene, bromodichloromethane, vinyl chloride, and iron. Natural attenuation with monitoring was selected as groundwater remedy. SWMU 014 is included in the KSC Industrial Area Long-Term Monitoring Program. As of 2018, vinyl chloride was the only analyte remaining in the monitoring program because other analytes had attained their respective FDEP GCTL. That year, semi-annual vinyl chloride results for the single well with prior exceedances met the GCTL (Jacobs, 2019).

On November 2, 2006, a spill of Aqueous Film Forming Form (AFFF) was reported at the south tarmac of SWMU 014. Reportedly, a mixture of water and foam agent discharged from fire engine plumbing when a heavy equipment mechanic opened the system for repairs. An internal failure allowed liquid to seep into an area of plumbing that should have been otherwise dry. The mechanic contained the liquid on the pavement with spill socks and booms. The spill was reported to be approximately 20 gallons.

During confirmatory sampling for the KSC-wide PFAS site assessment performed between 2019 and January 2021 (Geosyntec, 2019), DPT samples were collected at 23 locations around SWMU 014 and SWMU 118. Concentrations of one or more PFAS compounds exceeded the RSL at one or more depths at all locations except for PFAS-DPT0075, located at the southeast end of the two borrow pits. At the time of the confirmatory sampling, results were screened against the FDEP

pGCTL of 70 ng/L. The highest PFOS concentrations were detected at PFAS-DPT0115 near the location of the AFFF spill and PFAS-DPT0116 southeast of the Base Support Building. The results were 100 times the pGCTL for PFOA+PFAS in the 10, 25, and 35 feet (ft) below ground surface (bgs) samples at DPT0115 and 100 times the pGCTL in the 25 and 35 ft bgs samples at DPT0116. Additionally, high PFOS concentrations were detected in PFAS-DPT0175 located at the eastern most edge of SWMU 118 and just north of the entrance to KARS Park II. High concentrations of PFOS at KARS Park II may be associated with a reported release of AFFF of unknown volume and location on May 17,1993 (GeoSyntec, 2019).

Two SW samples were collected in drainage ditches to the south and east of SWMU 014 in 2020. Both samples exceeded the SW SL for PFOS. Additionally, five SW samples were collected from four locations at SWMU 118 between 2019 and 2021. Two in the borrow pits and two from drainage ditches along either side of NASA Parkway. The northern borrow pit sample and drainage ditch along the southern side of NASA Parkway exceeded the SW SL for PFOS. All SW samples were below the SW SL for PFOA at both SWMU 014 and SWMU 118.

In addition to groundwater and SW samples, 11 soil samples were collected from five locations and 5 sediment samples were collected at SWMU 014 and SWMU 118. Soil samples were collected at 0 to 0.5 ft bgs and 0.5 ft to 2 ft bgs and sediment samples were collected from drainage ditches at 0 to 1 ft bgs. Concentrations of PFAS compounds were below the RSLs in all soil samples. While there are not currently a screening levels for sediment, PFAS concentrations in sediment samples were relatively low and PFOS had the highest concentration in each sample with PFAS detections; the maximum PFOS concentration was 0.0156 milligrams per kilogram (mg/kg) at PFAS-SD0028, well below the soil RSL of 0.13 mg/kg.

2.3 Lithology

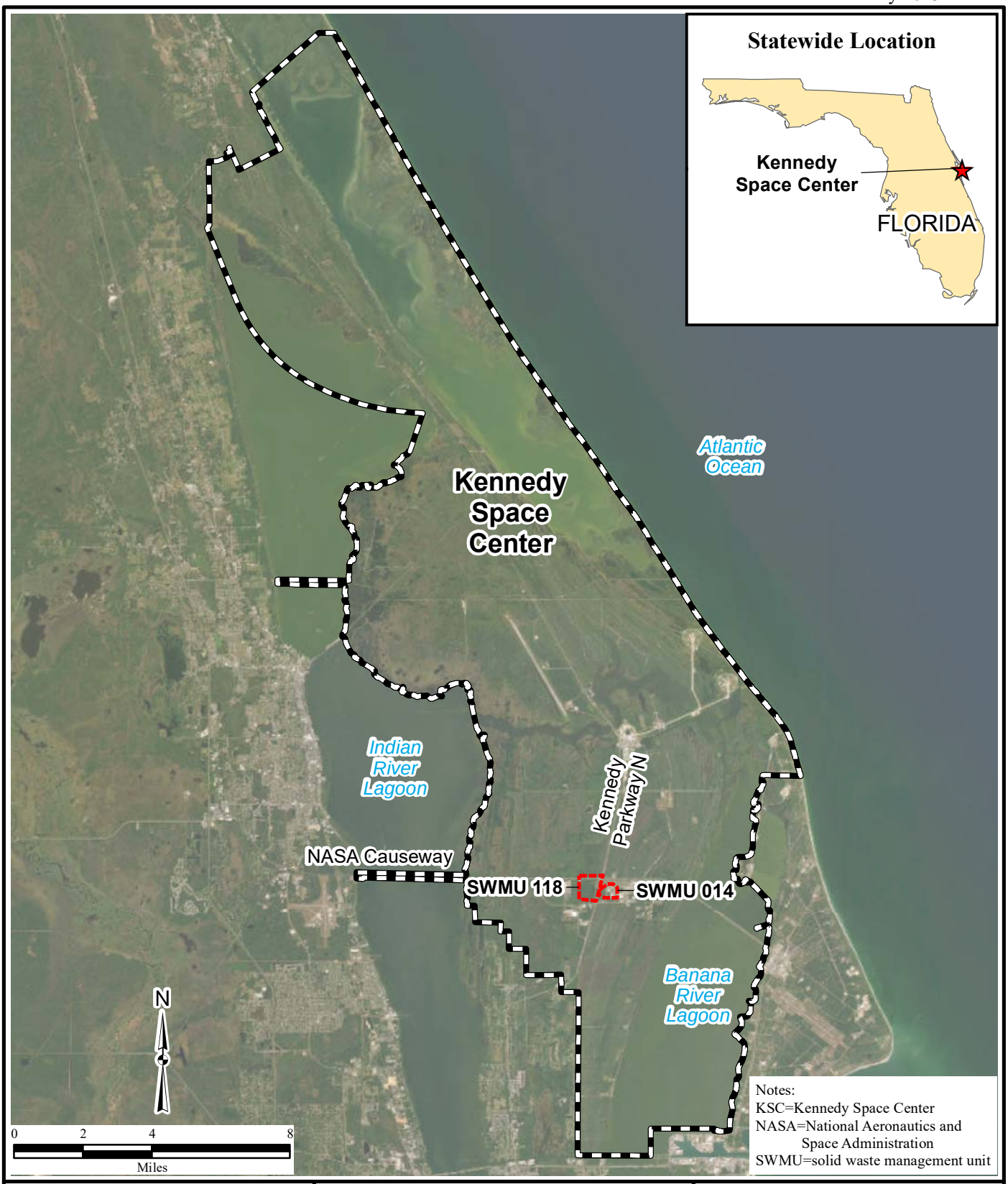
Three soil borings were advanced as part of the SWMUs 014 and 118 2022 PFAS site assessment activities. The borings were located south of the Base Support Building, adjacent to S014-DPT1005, southeast of the paved area surrounding the Government Services Administration (GSA) Automotive Facility, and north of the access road to KARS Park II northwest of PFAS-DPT0175 (**Figure 2-3**). Soil borings were advanced using a rotosonic drilling rig and continuous soil cores were collected to a depth of 60 ft bgs. The three borings included alternating layers of sands and shells with some silt until a grey green clay/silt was encountered. At S014-LB02, closer to the Base Support Building, the grey green clay/silt was encountered at approximately 46 ft bgs, 11 ft higher than at S014-LB01 (57 ft bgs). At S014-LB02, the bottom of the grey green clay/silt was encountered at approximately 58 ft bgs. At S118-LB01, shell hash with greenish grey clayey silt was encountered at 50 ft bgs; this material was coarser than the other two borings and may not represent the same semi-confining grey green clay/silt.

2.4 Hydrology and Hydrogeology

SW drains to interconnected ditches throughout SWMU 014 and along Kennedy Parkway and NASA Parkway along the edges of SWMU 118. SW within KARS Park II drains to several borrow pits of unknown depth. Runoff from paved lots is directed to drainage ditches through curb cuts. Culverts between these ditches are slightly elevated above the bottom, causing water to be contained within each ditch until the level is high enough to flow through culverts. Between rain events, water within these ditches evaporates or infiltrates into the subsurface. When SW flow

does occur through these ditches, it is directed to the southeast towards the Banana River from SWMU 014 and to the west towards the Indian River from SWMU 118. SW leaves SWMU 014 at a culvert beneath 4th Street SE, west of B Avenue SE. Surface water leaves SWMU 118 through the drainage ditches along the southern edge of NASA Parkway.

Historical groundwater data from sites adjacent to SWMU 014 and SWMU 118 indicate that groundwater flow is to the southeast on the west of B Avenue SE and to the southwest east of B Avenue SE (HSW, 1998; GeoSyntec, 2003, 2007). KSC-wide synoptic groundwater gauging performed by AECOM in October 2020 and February 2021 indicated that SWMU 014 is atop a local groundwater divide where groundwater flows either to the west-northwest towards KARS Park II or to the southeast towards an apparent trough in the potentiometric surface along Avenue B SE before eventually flowing to the south and west (AECOM, 2021). SWMU 118 is located west of the groundwater divide with groundwater flow to the west towards Indian River. **Figure 2-4** depicts the potentiometric surface from AECOM's 2021 Predictive Integrated Stratigraphic Modeling (PRISM®) Report.



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Source: HGL, 3E Consultants
ArcGIS Online Imagery

Legend

- Site Location
- SWMU 014/118 Boundaries
- Kennedy Space Center

Figure 2-1
SWMU 014 and SWMU 118
Base Support Building and KARS Park II
Site Location Map

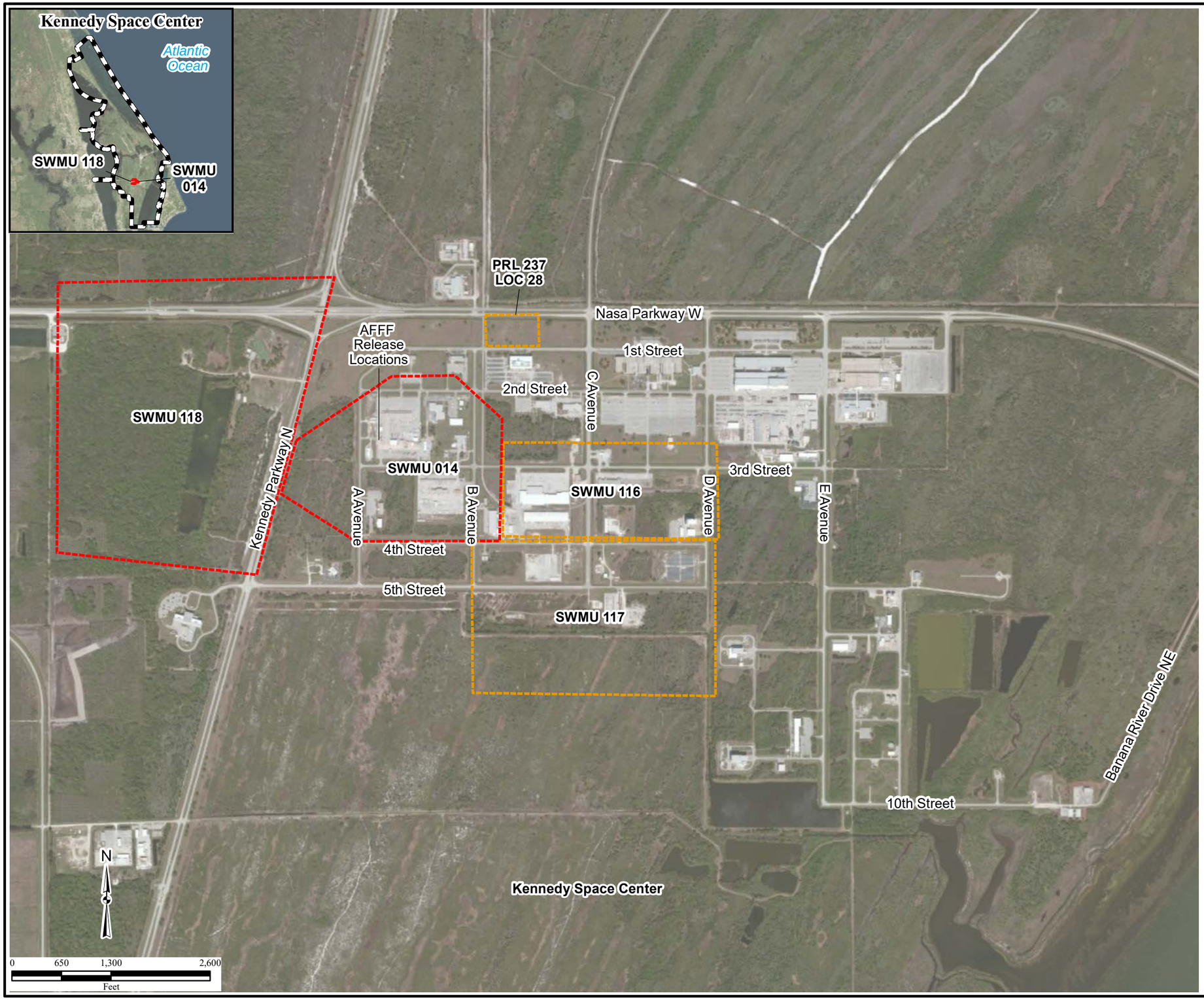


Figure 2-2
SWMU 014 and SWMU 118
Base Support Building and
KARS Park II
Site Layout

Legend

- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries
- Kennedy Space Center

Notes:
AFFF=aqueous film-forming foam
LOC=location of concern
PRL=potential release location
SWMU=solid waste management unit

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Source: HGL, ArcGIS Online Imagery

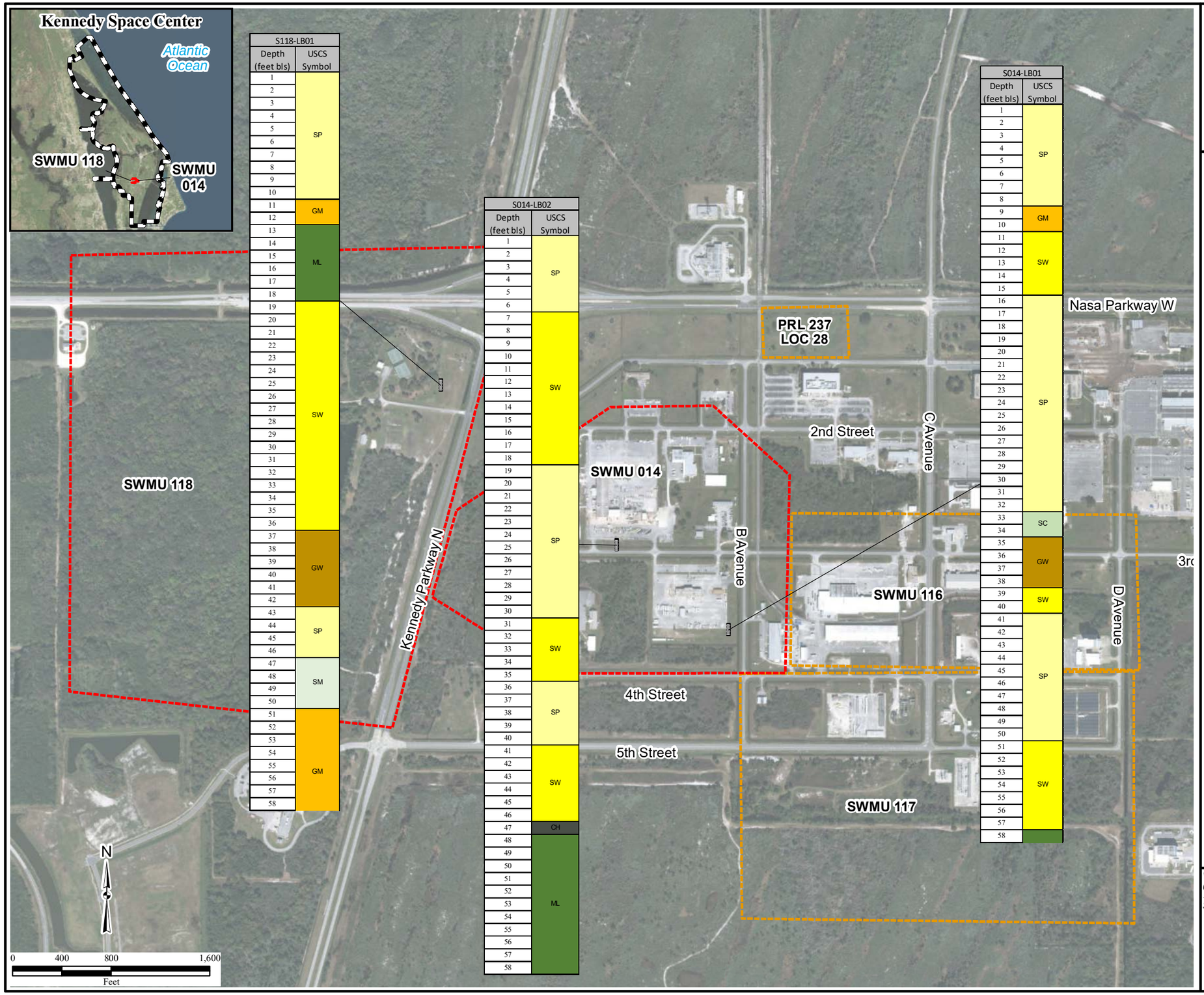


Figure 2-3
SWMU 014 and SWMU 118 Base Support Building and KARS Park II Lithologic Boring Location Map

Legend

- Lithologic Boring
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries
- Kennedy Space Center

Notes:
LOC=location of concern
PRL=potential release location
SWMU=solid waste management unit

Legend	
GW	Well graded gravel
GM	Gravel with silt
GC	Gravel with clay
SW	Well graded sand
SP	Poorly graded sand
SM	Sand with silt
SC	Sand with clay
ML	Inorganic silt with low plasticity
CL	Inorganic clay with low plasticity
CH	Inorganic clay with high plasticity

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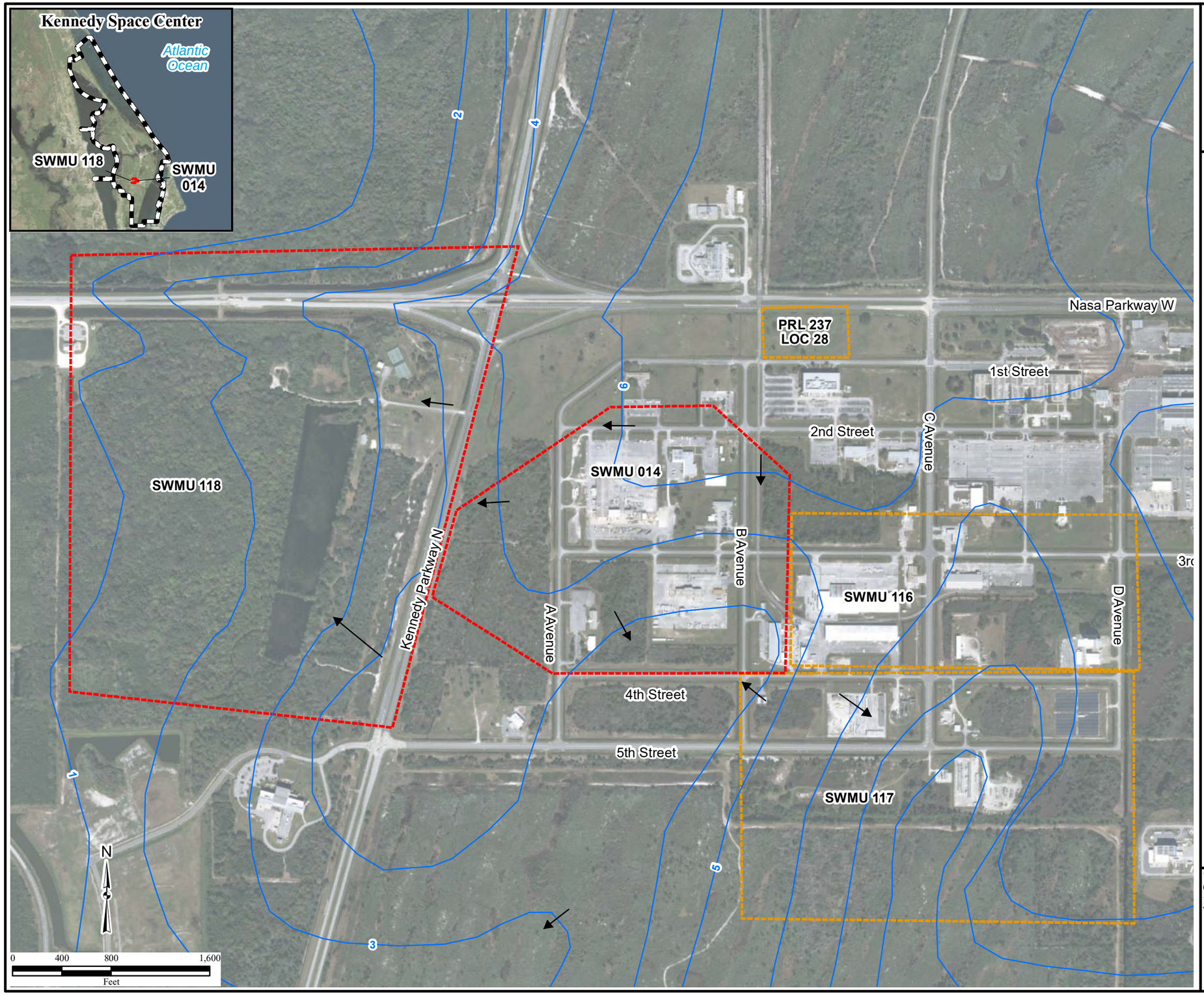


Figure 2-4
SWMU 014 and SWMU 118
Base Support Building and
KARS Park II
Groundwater Flow Direction Map

Legend

- 2 — Groundwater Contour Elevation October 2020 (ft NAVD 88) Source: AECOM Prism Report, 2021
- Groundwater Flow Direction
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries
- Kennedy Space Center

Notes:
LOC=location of concern
NAVD 88=North American Vertical Datum of 1988
PRL=potential release location
SWMU=solid waste management unit

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1/3/2023 TB
Source: HGL, ArcGIS Online Imagery

3. PFAS Site Assessment Methodologies and Activities

Based upon the results of the 2019 KSC-wide PFAS site assessment, additional groundwater and SW sampling was conducted between February 2022 and June 2022 to further investigate the PFAS concentrations at SWMU 014 and SWMU 118. The objectives of the sampling were to delineate concentrations in groundwater to the RSLs for PFOS (4 ng/L), PFOA (6 ng/L), PFNA (6 ng/L), GenX (6 ng/L), PFHxS (39 ng/L), and PFBS (601 ng/L); and to delineate concentrations in SW to the FDEP SW SL for PFOS (10 ng/L) and PFOA (500 ng/L). Groundwater sampling locations for samples collected between February 2022 and June 2022 are shown on **Figure 3-1** and **Figure 3-2**. The field activities at SWMU 014 included:

- Advancement of two borings to 60 ft bgs for lithologic descriptions;
- Collection of 116 DPT groundwater samples from 22 locations in and around SWMU 014; and
- Collection of 13 SW samples from 11 locations from ditches adjoining and in the vicinity of SWMU 014.

The field activities at SWMU 118 included:

- Advancement of one boring to 60 ft bgs for lithologic descriptions;
- Collection of 64 DPT groundwater samples from 14 locations in and around SWMU 118; and
- Collection 22 SW samples from 8 locations from ditches along Kennedy Parkway and NASA Parkway, and a single SW sample from the northern borrow pit.

Field documentation is provided in **Appendix C** and a photographic log is provided in **Appendix D**.

3.1 Soil Core Sampling Activities

Three soil borings were advanced to 60 ft using rotosonic drilling technology in February 2022 at SWMU 014 and SWMU 118. Lithologic borings were performed to identify site lithology, specifically to identify the depth when the grey-green clay and silt was encountered, and to confirm that DPT samples were collected from the correct horizons. The subsurface materials encountered were characterized using the Unified Soil Classification System. Boring logs are provided in **Appendix C** and a brief description of each boring log is provided below.

- S014-LB01
  - Land surface to 57 ft bgs: sand and shell hash
  - 57 ft bgs to 60 ft bgs: grey-green, slightly clayey silt

- S014-LB02
  - Land surface to 46 ft bgs: sand and shell hash
  - 56 ft bgs to 58 ft bgs: grey-green clays and silts
  - 58 ft bgs to 60 ft bgs: shell hash with grey-green silt
- S118-LB01
  - Land surface to 10 ft bgs: sand and shell hash
  - 10 ft bgs to 18 ft bgs: grey-white silt with shells
  - 18 ft bgs to 50 ft bgs: sand and shell hash
  - 50 ft bgs to 60 ft bgs: shell hash with greenish grey clayey silt

The grey-green clay and silt is anticipated to act as a semi-confining unit across much of Merritt Island and prevent the downward migration of PFAS. Grey-green clay and silt was encountered in the three borings at a depth of about 50 ft bgs to 60 ft bgs, although the material encountered in S118-LB01 was primarily shell hash and therefore less likely to act as a semi-confining unit. Soil samples were not collected from soil boring locations since deep PFAS impacts were not anticipated in the area.

3.2 PFAS Sampling Protocol

PFAS has been found to be present in many consumer products, including some typically used sampling equipment. Therefore, special precautions were followed to avoid compromising sampling integrity during collection. Field sampling methodologies were conducted in accordance with applicable portions of the Standard Operating Procedure (SOP) for Groundwater Sampling with DPT and Analysis of Per- and Polyfluoroalkyl Substances (NASA, 2019a) prepared to guide PFAS sampling activities at NASA sites and HGL's SOP for PFAS Sampling Procedures (HGL, 2020).

The methods and protocols in the SOPs used for collecting and handling PFAS samples were followed to prevent cross-contamination of PFAS from consumer items and field sampling equipment to the samples. Tubing was replaced with new high density polyethylene (HDPE) tubing at each DPT location and interval to prevent cross-contamination. Field quality control samples also were collected to evaluate potential PFAS cross-contamination in the site samples, as discussed in Section 3.6.

3.3 DPT Groundwater Sampling

Eleven days of DPT groundwater sampling were performed from February 23 through March 4, 2022, and June 16, 17 and 22, 2022, in an attempt to delineate PFAS contamination to the screening criteria. One hundred eighty (180) groundwater samples were collected from 36 boring locations (S014-DPT1000 through S014-DPT1020, S118-DPT1000 through S118-DPT1010, PFAS-DPT0074, PFAS-DPT0180, and PFAS-DPT0183), as presented on **Figure 3-1** and **Figure 3-2**. Samples were collected at five depths (3 to 7, 13 to 17, 23 to 27, 33 to 37, and 43 to 47 ft bgs) at each location using a peristaltic pump through HDPE tubing from the midpoint of the screen. Four deeper samples, including one duplicate, were collected from three previously sampled locations (PFAS-DPT0074, PFAS-DPT0180, and PFAS-DPT0183) from 53 to 57 ft bgs for vertical delineation.

Prior to using DPT tooling, the borehole was started using a stainless-steel hand auger to a depth of 5 ft to verify the absence of underground utilities. Groundwater samples were collected by DPT methods using a 4-ft-long stainless-steel retractable screen. New HDPE tubing was used at each sampling depth and location. When the desired sampling depth was reached, the tubing was placed into the borehole through the sampling rods at mid-screen, and the groundwater was purged with a peristaltic pump until the water was visually free of sediment. DPT groundwater samples were then collected and placed in laboratory-provided sample containers. The sample containers were sealed, labeled, packed on ice, and transferred by courier under proper chain-of-custody protocol to the laboratory. The DPT groundwater samples were analyzed for 25 PFAS analytes by SGS North American Inc. (SGS) by USEPA Method 537M.

3.4 Surface Water Sampling

Thirty-five (35) SW samples were collected from 19 locations from swales near SWMU 014 and SWMU 118 (six locations along A Avenue SE, two locations along 3rd Street SE, two locations along B Avenue SE, one location from the swale west of B Avenue SE, two locations along the west side of Kennedy Parkway, five locations along the south side of NASA Parkway, and one location from the northern borrow pit), as identified on **Figure 3-1** and **Figure 3-2**. Grab samples were collected from the swales and culvert openings. Samples were collected near the water surface. SW samples were collected using a decontaminated HDPE dipper sampler following FDEP SOP guidance.

3.5 PFAS Laboratory Analysis

Following collection, all groundwater and SW samples were transferred by courier under proper chain-of-custody protocol to SGS of Orlando, Florida, a National Environmental Laboratory Accreditation Program-certified laboratory for analysis of PFAS using modified USEPA Method 537. All samples were analyzed for the 25 PFAS analytes listed in **Table 3-1**.

3.6 Investigation Derived Waste

Investigation-derived waste (IDW) generated during the investigation included soil cuttings, purge water generated from DPT sampling, and decontamination water. The IDW water was added to 15-gallon poly tanks prior to being transferred with the soil cuttings into multiple Department of Transportation-approved 55-gallon drums that were staged on spill pallets at the Components Cleaning Facility IDW storage. Each drum was sampled for PFAS analysis. Analytical results were submitted to the NASA Remediation Project Manager to be used for disposal.

3.7 Field Data Quality

Field quality control samples were collected to ensure sample concentrations are representative of the parent sample concentrations. Field duplicate samples were collected at the same time and location as the parent sample. Field duplicates are collected to assess field and analytical precision as well as sample heterogeneity. One equipment blank sample was collected per day from decontaminated reusable field sampling equipment (DPT temporary screen and rods, dipper or unused tubing). One field blank per day also was collected to assess ambient contamination within the field for potential cross-contamination during sample collection.

Table 3-1
PFAS Acronyms

Analyte	Acronym	CAS Number
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanesulfonic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA	2058-94-8
Perfluorodecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTriA	72629-94-8
Perfluorotetradecanoic acid	PFTeA	376-06-7
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorododecanoic acid	PFDS	335-77-3
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
4:2 Fluorotelomer sulfonate	4:2 FTS	757124-72-4
6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Hexafluoropropylene oxide dimer acid	GenX	13252-13-6

Note:
CAS = Chemical Abstracts Service

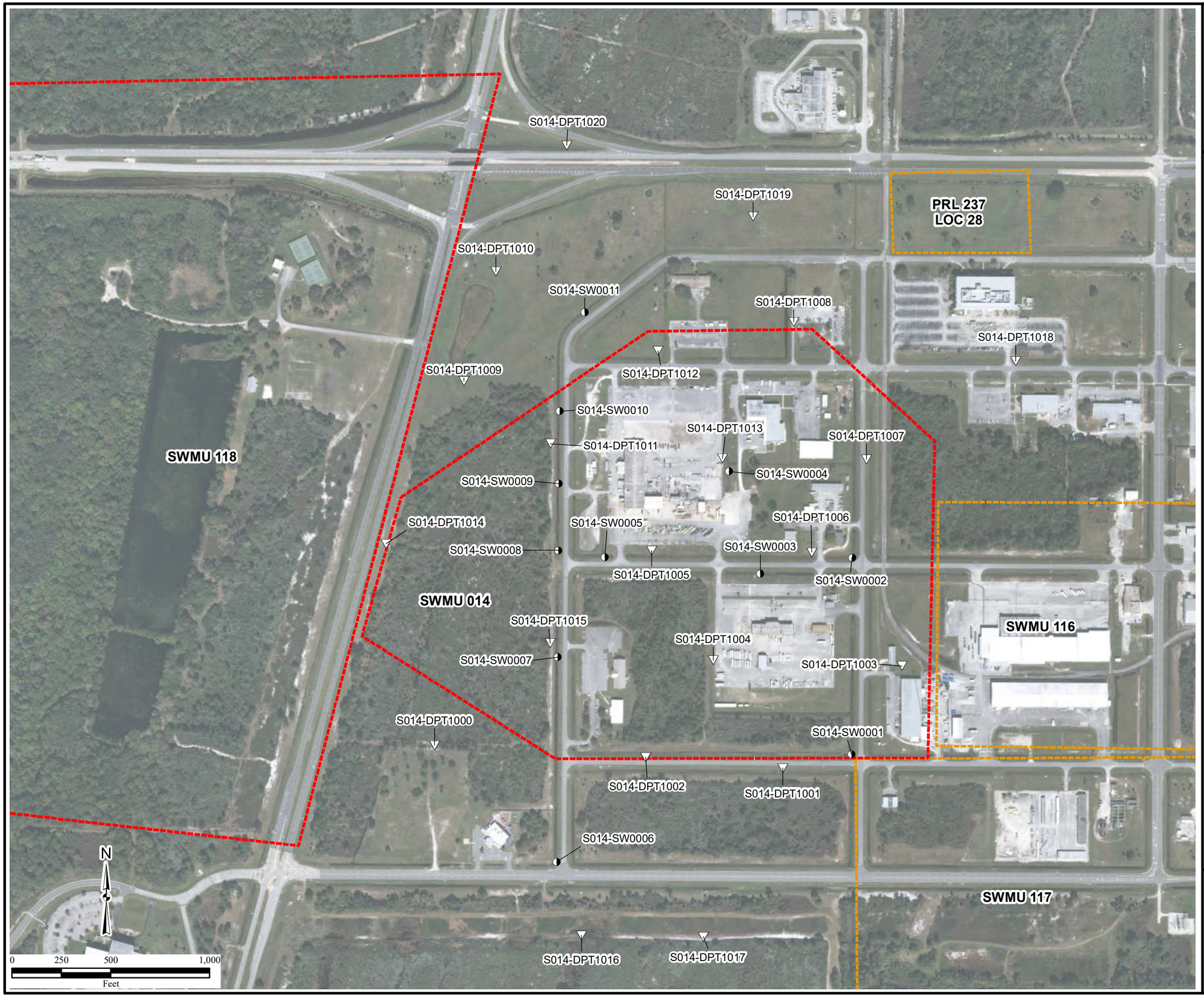


Figure 3-1
SWMU 014
Base Support Building
Sample Location Map

Legend

- DPT Groundwater Sample
- Surface Water Sample
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries

Notes:
DPT=direct push technology
LOC=location of concern
PRL=potential release location
SW=surface water
SWMU=solid waste management unit

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Source: HGL, ArcGIS Online Imagery



Figure 3-2
SWMU 118
KARS Park II
Sample Location Map

Legend

- ▽ DPT Groundwater Sample
- ◑ Surface Water Sample
- SWMU 014/118 Boundaries

Notes:
DPT=direct push technology
SW=surface water
SWMU=solid waste management unit

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1/4/2023 TB
Source: HGL, ArcGIS Online Imagery

4. Data Evaluation and Screening Process

The PFAS site assessment data evaluation consisted of determining USEPA RSL exceedances for groundwater at each sample location and depth interval for PFOA, PFNA, PFBS, PFHxS, PFOS, and GenX for groundwater and FDEP SW SL exceedances at each SW sample location for PFOA and PFOS. Previous investigations included samples from groundwater, SW, soil, and sediment. These previous samples collected between 2019 and 2021 were compared to current RSLs and FDEP SW SLs. Results for groundwater were compared to the resident tap water RSLs released in May 2022 (USEPA, 2022a). Results for SW were compared to the FDEP SW SLs developed in April 2020 (FDEP, 2020). Results for soil were compared to the residential soil RSLs released in May 2022 (USEPA, 2022b).

Additional PFAS assessment included comparing the ratios of the 25 analyzed PFAS detected in each sample to assess migration pathways and potential sources. The PFAS analytes, acronyms, and Chemical Abstracts Service numbers are presented in **Table 3-1**. These PFAS ratios are used to develop fingerprints for source areas and track migration from source areas to groundwater and between groundwater and SW.

Analytical data results collected between February 2022 and June 2022 are presented in **Tables 4-1** through **4-10**. Analytical data results from previous investigations collected between 2019 and 2021 are presented in **Appendix E** in **Tables E-1** through **E-8** and laboratory analytical data packages are provided in **Appendix F**.

4.1 Groundwater

4.1.1 SWMU 014 – Base Support Building

One hundred sixteen (116) DPT groundwater samples were collected at SWMU 014 from 22 locations. Five depth intervals were sampled at each DPT location to a total depth of approximately 47 ft bgs and a previous DPT location, PFAS-DPT0180, was sampled from between 53 and 57 ft bgs. DPT locations were selected to delineate the extent of PFAS in groundwater based on previous DPT sample results collected in 2019 and 2021 (**Appendix E, Table E-1**). Results of the DPT PFAS samples are presented in **Table 4-1**. **Table 4-2** presents the frequencies of detections, maximum detected concentrations for all PFAS analyzed, and the number of detections above RSLs. Results of DPT groundwater samples collected in February, March, and June 2022 are depicted in **Figure 4-1**. Additional figures depicting the extent of PFAS compounds in groundwater exceeding RSLs are provided in the SAPR ADP (**Appendix B**).

Of the 25 PFAS analytes, 23 were detected in groundwater at SWMU 014. The most frequently detected PFAS was PFOS and PFHxS, both detected in 74 of 116 samples (63.8%). For PFOS, 67 of 116 samples exceeded the RSL (4 ng/L). N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) and GenX were not detected in any samples. The detection limit for GenX exceeded the RSL of 6 ng/L in all of the collected samples. Additionally, the detection limit for PFOS exceeded the RSL in 12 samples, and the detection limits for PFOA and PFNA exceeded the RSL in one sample each.

S014-DPT1005, located south of the Base Support Building, had the highest detected concentrations of most PFAS, including PFOS (50,200 ng/L or 12,550 times higher than the RSL) at a depth between 13 and 17 ft bgs. PFOS and PFHxS generally make up the largest percentage of PFAS in each sample.

4.1.2 SWMU 118 – KARS Park II

Sixty-four (64) DPT groundwater samples were collected at SWMU 118 from 14 locations. Five depth intervals were sampled at each new DPT location to a total depth of approximately 47 ft bgs and two previous DPT locations, PFAS-DPT0074 and PFAS-DPT0183, were sampled from between 53 and 57 ft bgs. DPT locations were selected to delineate the extent of PFAS in groundwater based on previous DPT sample results collected in 2018, 2019, and 2021 (**Table E-2**). Results of the DPT PFAS samples are presented in **Table 4-3**. **Table 4-4** presents the frequencies of detections, maximum detected concentrations for all PFAS analyzed, and the number of detections above RSLs. Results of DPT groundwater samples collected in February, March, and June 2022 are depicted in **Figure 4-1**. Additional figures depicting the extent of PFAS compounds in groundwater exceeding RSLs are provided in the SAPR ADP (**Appendix B**).

Of the 25 PFAS analytes, 14 were detected in groundwater at SWMU 118. The most frequently detected PFAS was PFOS, detected in 36 of 64 samples (56.3%) with 28 of 64 samples exceeding the PFOS RSL (4 ng/L). Of the six PFAS analytes with RSLs, only three had exceedances, PFOA, PFHxS, and PFOS. It should be noted that the detection limit for GenX exceeded the RSL of 6 ng/L for all samples and the detection limit for PFOA, PFNA, and PFOS exceeded the RSL in some samples.

S118-DPT1001, located south of entrance to KARS Park II and along Kennedy Parkway, had the highest detected concentrations of most PFAS, including PFOS (1,510 ng/L or 377 times higher than the RSL) at a depth between 33 and 37 ft bgs. Previous samples at KARS Park II, specifically PFAS-DPT0175, had higher PFAS concentrations than samples collected in 2022. PFAS-DPT0175, located just north of the entrance to KARS Park II and adjacent to the ditch along Kennedy Parkway had a maximum PFOS concentration of 10,400 ng/L between 6 and 10 ft bgs. PFOS and PFHxS generally make up the largest percentage of PFAS in each sample.

PFAS ratios in DPT groundwater samples tend to have higher concentrations of PFOS and PFHxS with lower concentrations of other PFAS. Generally, carboxylates, such as PFOA, make up less than one quarter of the total PFAS concentration in DPT samples. The typical ratios of PFAS observed in DPT samples are representative of clusters identified by AECOM (2021) for legacy AFFF. Fewer DPT groundwater samples may have been representative of modern AFFF, having a higher PFHxS concentration than PFOS concentration, although these samples were generally deeper in the water column and may be a result of smaller chain PFAS such as PFHxS (six carbons) moving more rapidly in the environment than longer chain PFAS such as PFOS (eight carbons).

4.2 Surface Water

4.2.1 SWMU 014 – Base Support Building

Thirteen (13) SW samples were collected at SWMU 014 from 11 locations. SW sample locations were selected to define the extent of PFAS migration within ditches along roads and to confirm PFAS SW concentrations observed in previous sampling events (**Appendix E, Table E-3**). Results of SW PFAS samples are presented in **Table 4-5**. **Table 4-6** presents the frequencies of detections, maximum detected concentrations for all PFAS analyzed, and the number of detections above SW SLs. Results of SW samples collected in February and June 2022 are depicted in **Figure 4-2**. Additional figures depicting the extent of PFAS compounds in surface water exceeding SW SLs are provided in the SAPR ADP (**Appendix B**).

Fourteen of the 25 PFAS analytes were detected at SWMU 014 sampling locations. Of the 14 detected PFAS analytes, 10 were detected in all 13 SW samples. All 13 SW samples exceeded the SW SL for PFOS. No samples exceeded the SW SL for PFOA.

S014-SW0007, west of Avenue A and between 3rd Street SE and 4th Street SE, had the highest concentration of detected PFAS, with the exception of Perfluorodecanesulfonic acid (PFDA), PFOS, Perfluorooctanesulfonamide (PFOSA), and 6:2 Fluorotelomer sulfonate (6:2 FTS). S014-SW0003, just north of the GSA Automotive Facility and in the ditch south of 3rd Street SE, had the highest concentration of PFOS; however, the duplicate sample for S014-SW0003 had a lower concentration of PFOS than S014-SW0007. The highest PFAS concentration analyzed in SW was PFOS (1,710 ng/L in February 2022). PFOS constituted the largest percentage of PFAS at 10 of 11 locations and PFHxS constituted the largest percentage of PFAS at the 11th location.

Similar to PFAS ratios for groundwater, SW ratios tend to have higher concentrations of PFOS and PFHxS with carboxylates comprising less than a quarter of the total PFAS concentration. With the exception of S014-SW0004, located east of the Base Support Building, SW samples matched clusters identified by AECOM (2021) for legacy AFFF. S014-SW0004 more closely matched modern AFFF clusters with higher PFHxS than PFOS concentrations.

4.2.2 SWMU 118 – KARS Park II

Twenty-two (22) SW samples were collected at SWMU 118 from eight locations. SW sample locations were selected to define the extent of PFAS migration within ditches along roads, to confirm PFAS SW concentrations observed in previous sampling events (**Table E-4**), and to determine PFAS trends through time as a result of precipitation. Results of SW PFAS samples are presented in **Table 4-7**. **Table 4-8** presents the frequencies of detections, maximum detected concentrations for all PFAS analyzed, and the number of detections above SW SLs. Results of SW samples collected between February, may, and June 2022 are depicted in **Figure 4-2**. Additional figures depicting the extent of PFAS compounds in surface water exceeding SW SLs are provided in the SAPR ADP (**Appendix B**).

Eleven of 25 PFAS analytes were detected in SW at SWMU 118. Of the 11 detected PFAS analytes, only PFOS and PFBA were detected in all 22 samples. Twenty-one (21) of 22 SW samples exceeded the SW SL for PFOS. No samples exceeded the SW SL for PFOA.

S118-SW0007, west of the intersection of Kennedy Parkway and NASA Parkway, had the highest concentration of PFOS, with the sample from June 23, 2022, having a concentration of 708 ng/L. PFAS concentrations in SW decreased with each subsequent ditch to the west along NASA Parkway. Timeseries data was collected along a flow path from three drainage ditches along NASA Parkway separated by culverts, S118-SW0005, S118-SW0006, and S118-SW0007. PFAS concentrations, specifically PFOS, generally increased from May 16, 2022, to June 23, 2022, over the four samples. The increase was most pronounced in S118-SW007, closest to the intersection of Kennedy Parkway and NASA Parkway. The concentration of PFOS increased from 542 ng/L on June 17, 2022, to 708 ng/L on June 23, 2022, following two rain events on June 18 and 20, 2022 that amounted to a total of 2.3 inches of precipitation. S118-SW0006 had a similar increase in PFOS over that period from 442 ng/L on June 17, 2022, to 541 ng/L and 562 ng/L on June 23, 2022. The study indicates that rain events may cause PFAS concentrations to increase in SW. The source of PFAS to SW is uncertain and continued study is necessary to determine temporal impacts in SW.

4.3 Quality Control Samples

Field quality control samples were collected to ensure sample concentrations are representative of the parent sample concentrations. One equipment blank and one field blank per day were collected to assess ambient contamination within the field for potential cross-contamination during sample collection. **Table 4-9** and **Table 4-10** show the field quality control samples for the PFAS SAPR, which indicated no evidence of cross-contamination.

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1000	S014-DPT1000	S014-DPT1000	S014-DPT1000	S014-DPT1000	S014-DPT1001	S014-DPT1001	S014-DPT1001	S014-DPT1001
Sample ID:			S014-DPT1000-005.0-20220225	S014-DPT1000-015.0-20220225	S014-DPT1000-025.0-20220225	S014-DPT1000-035.0-20220225	S014-DPT1000-045.0-20220225	S014-DPT1001-005.0-20220225	S014-FD-20220225-01	S014-DPT1001-015.0-20220225	S014-DPT1001-025.0-20220225
Depth Interval:			3 - 7 ft bgs	13 - 17 ft bgs	23 - 27 ft bgs	33 - 37 ft bgs	43 - 47 ft bgs	3 - 7 ft bgs	3 - 7 ft bgs	13 - 17 ft bgs	23 - 27 ft bgs
Sample Date			2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022
Sample Type:			Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal	Normal
Acronym	RSL[(1)]	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	7.9 J	38 U	38 U	38 U	7.7 U	7.7 U	7.7 U	38 U	38 U
PFPeA	N/A	ng/L	3.8 U	19 U	19 U	19 U	3.8 U	3.5 J	3.8 J	19 U	19 U
PFHxA	N/A	ng/L	3.8 U	19 U	19 U	3.8 U	3.8 U	3.9 J	3.9 J	4.3 J	3.8 U
PFHpA	N/A	ng/L	3.8 U	2.2 J	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	2.4 J	3.8 U
PFOA	6	ng/L	3.8 U	4.5 J	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	4.4 J	3.8 U
PFNA	6	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFDA	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFUnA	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFDoA	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFTriA	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFTeA	N/A	ng/L	19 U	3.8 U	3.8 U	3.8 U	3.8 U	19 U	3.8 U	3.8 U	19 U
PFBS	601	ng/L	3.8 U	19 U	19 U	3.8 U	3.8 U	2.6 J	2.7 J	19 U	19 U
PFPeS	N/A	ng/L	3.8 U	19 U	19 U	3.8 U	3.8 U	3.3 J	3.2 J	19 U	19 U
PFHxS	39	ng/L	3.8 U	2.6 J	3.8 U	3.8 U	3.8 U	31	32.2	23.5	3.8 U
PFHpS	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFOS	4	ng/L	2.9 J	**8**	3.8 U	3.8 U	3.8 U	**53.3**	**53.2**	3.8 U	3.8 U
PFNS	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFDS	N/A	ng/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
PFOSA	N/A	ng/L	19 U	3.8 U	3.8 U	3.8 U	19 U	3.8 U	3.8 U	19 U	3.8 U
NMeFOSAA	N/A	ng/L	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U
NEtFOSAA	N/A	ng/L	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U
4:2 FTS	N/A	ng/L	7.7 U	38 U	38 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U
6:2 FTS	N/A	ng/L	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U
8:2 FTS	N/A	ng/L	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U
GenX	6	ng/L	**7.7 U**	**38 U**	**38 U**	**7.7 U**	**7.7 U**	**7.7 U**	**7.7 U**	**7.7 U**	**7.7 U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1001		S014-DPT1001		S014-DPT1002		S014-DPT1002		S014-DPT1002		S014-DPT1002		S014-DPT1002		S014-DPT1003		S014-DPT1003	
Sample ID:			S014-DPT1001-035.0-20220225		S014-DPT1001-045.0-20220225		S014-DPT1002-005.0-20220225		S014-DPT1002-015.0-20220225		S014-DPT1002-025.0-20220225		S014-DPT1002-035.0-20220225		S014-DPT1002-045.0-20220225		S014-DPT1003-005.0-20220228		S014-DPT1003-015.0-20220228	
Depth Interval:			33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs	
Sample Date			2/25/2022		2/25/2022		2/25/2022		2/25/2022		2/25/2022		2/25/2022		2/25/2022		2/28/2022		2/28/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	40	U	38	U	38	U	38	U	38	U	38	U	38	U	40	U	40	U
PFPeA	N/A	ng/L	20	U	16.2	J	37.7	J	19	U	19	U	19	U	19	U	20	U	20	U
PFHxA	N/A	ng/L	31.1		71.2		29.3		19	U	3.8	U	3.8	U	3.8	U	4	U	20	U
PFHpA	N/A	ng/L	5.4	J	12.4		18		5.1	J	3.8	U	3.8	U	3.8	U	4	U	4	U
PFOA	6	ng/L	**14.7**		**32.1**		**10.5**		**7.9**		3.8	U	3.8	U	3.8	U	4	U	4	U
PFNA	6	ng/L	4	U	3.8	U	2.7	J	**6.2**	**J**	3.8	U	3.8	U	3.8	U	4	U	4	U
PFDA	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFTeA	N/A	ng/L	20	U	3.8	U	19	U	3.8	U	19	U	19	U	19	U	4	U	20	U
PFBS	601	ng/L	24.5	J	54.5		19	U	19	U	19	U	19	U	3.8	U	4	U	20	U
PFPeS	N/A	ng/L	27.6	J	71		10.4	J	19	U	19	U	19	U	3.8	U	4	U	20	U
PFHxS	39	ng/L	**104**		**263**		**83.8**		**58.6**		3.8	U	3.8	U	3.8	U	4	U	4	U
PFHpS	N/A	ng/L	5.1	J	3.8	U	5.1	J	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFOS	4	ng/L	**18.4**		**55.9**		**359**		**109**		**4.2**	**J**	3.7	J	2.5	J	4	U	2.5	J
PFNS	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFDS	N/A	ng/L	4	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U
PFOSA	N/A	ng/L	20	U	3.8	U	19	U	19	U	3.8	U	3.8	U	19	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	7.7	U	6.9	J	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U
GenX	6	ng/L	**8**	**U**	**7.7**	**U**	**7.7**	**U**	**38**	**U**	**7.7**	**U**	**7.7**	**U**	**7.7**	**U**	**8**	**U**	**40**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1003		S014-DPT1003		S014-DPT1003		S014-DPT1003		S014-DPT1004		S014-DPT1004		S014-DPT1004		S014-DPT1004		S014-DPT1004	
Sample ID:			S014-DPT1003-025.0-20220228		S014-DPT1003-035.0-20220228		S014-DPT1003-045.0-20220228		S014-FD-20220228-01		S014-DPT1004-005.0-20220228		S014-DPT1004-015.0-20220228		S014-DPT1004-025.0-20220228		S014-DPT1004-035.0-20220228		S014-DPT1004-045.0-20220228	
Depth Interval:			23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date			2/28/2022		2/28/2022		2/28/2022		2/28/2022		2/28/2022		2/28/2022		2/28/2022		2/28/2022		2/28/2022	
Sample Type:			Normal		Normal		Normal		Duplicate		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	40	U	53	U	48.8		40	U	11.9	J	10.8	J	11.3	J	39.3		51.6	J
PFPeA	N/A	ng/L	20	U	26	U	39.2		20	U	23.3		12.7		15.2		86		88.2	
PFHxA	N/A	ng/L	4	U	3.9	J	33.8		3.2	J	18.9		8.2		9.7		70.4		237	
PFHpA	N/A	ng/L	4	U	5.3	U	38.1		4	U	18		7.6	J	7.7	J	48.6		53.8	
PFOA	6	ng/L	2.9	J	5.1	J	**43.8**		4.3	J	**16.4**		**6.7**	**J**	5	J	**21.2**		**80.3**	
PFNA	6	ng/L	3.9	J	5.3	U	**41.7**		4	U	5.6	J	2.5	J	3.2	J	**18.9**		4	U
PFDA	N/A	ng/L	4	U	5.3	U	39.7		4	U	4	U	2.2	J	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	5.3	U	43.3		4	U	4	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	5.3	U	44.7		4	U	4	U	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	5.3	U	49.7		4	U	4	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	5.3	U	37.3		4	U	4	U	4	U	4	U	4	U	4	U
PFBS	601	ng/L	4	U	5.3	U	4	U	4	U	4	U	4	U	4	U	43.4		287	
PFPeS	N/A	ng/L	4	U	5.3	U	4	U	4	U	4	U	4	U	4	U	49.3		290	
PFHxS	39	ng/L	4	U	7.7	J	4	U	7.5	J	**39.8**		24.8		22		**334**		**1090**	
PFHpS	N/A	ng/L	4	U	5.3	U	4	U	4	U	3	J	4	U	4	U	22.3		51.8	
PFOS	4	ng/L	**10**		**5.3**	**U**	**14.7**		4	U	**171**		**79.3**		**257**		**694**		**554**	
PFNS	N/A	ng/L	4	U	5.3	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4	U	5.3	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	4	U	5.3	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	11	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	11	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	11	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	11	U	8	U	8	U	8	U	8	U	8	U	6.7	J	28.3	
8:2 FTS	N/A	ng/L	8	U	11	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
GenX	6	ng/L	**8**	**U**	**11**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1005		S014-DPT1005		S014-DPT1005		S014-DPT1005		S014-DPT1005		S014-DPT1006		S014-DPT1006		S014-DPT1006	
Sample ID:			S014-DPT1005-005.0-20220228		S014-DPT1005-015.0-20220228		S014-FD-20220228		S014-DPT1005-025.0-20220301		S014-DPT1005-035.0-20220301		S014-DPT1005-045.0-20220301		S014-DPT1006-005.0-20220301		S014-DPT1006-015.0-20220301		S014-DPT1006-025.0-20220301	
Depth Interval:			3 - 7 ft bgs		13 - 17 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs	
Sample Date			2/28/2022		2/28/2022		2/28/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022	
Sample Type:			Normal		Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	280		900		861		348		99.5		8.7	J	40	U	6.8	J	8.3	U
PFPeA	N/A	ng/L	951		3470		3350		1260		377		34.3		4	U	4	J	2.5	J
PFHxA	N/A	ng/L	973		3740		3620		1260		341		33.2		4	U	4.2	J	2.6	J
PFHpA	N/A	ng/L	347		1250		1180		786		171		12.6		4	U	3.8	J	4.2	U
PFOA	6	ng/L	**267**		**889**		**884**		**627**		**88.2**		**9.5**		2.3	J	**14.7**		**6.4**	**J**
PFNA	6	ng/L	**39.8**		**92.3**		**97.8**	**J**	**64.1**		4.6	J	4	U	4	U	4.2	U	4.2	U
PFDA	N/A	ng/L	4.1	J	18.8		19.6		4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFUnA	N/A	ng/L	5	U	4	U	4.2	U	4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFDoA	N/A	ng/L	5	U	4	U	4.2	U	4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFTriA	N/A	ng/L	5	U	4	U	4.2	U	4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFTeA	N/A	ng/L	100	U	2000	U	83	U	80	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFBS	601	ng/L	399		**1230**		**1190**		551		123		12.3		4	U	4.2	U	4.2	U
PFPeS	N/A	ng/L	435		1350		1320		579		133		13.6		4	U	4.2	U	4.2	U
PFHxS	39	ng/L	**2650**		**10600**		**10200**		**3440**		**745**		**92.5**		5.3	J	7.9	J	12.4	
PFHpS	N/A	ng/L	175		723		666		223		32.9		5.7	J	4	U	2.5	J	4.2	U
PFOS	4	ng/L	**3630**		**47800**		**50200**		**4720**		**1070**		**306**		**22.7**		**73.2**		**40**	
PFNS	N/A	ng/L	10.6		90.2	J	93.8	J	4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFDS	N/A	ng/L	5	U	4	U	4.2	U	4	U	4.5	U	4	U	4	U	4.2	U	4.2	U
PFOSA	N/A	ng/L	5	U	18.5		18.8		2.8	J	2.4	J	3	J	4	U	4.2	U	2.4	J
NMeFOSAA	N/A	ng/L	10	U	160	U	170	U	8	U	9.1	U	8	U	8	U	8.3	U	8.3	U
NEtFOSAA	N/A	ng/L	10	U	8	U	8.3	U	8	U	9.1	U	8	U	8	U	8.3	U	8.3	U
4:2 FTS	N/A	ng/L	8.8	J	22.3		21.1		57.8		12.8	J	8	U	8	U	8.3	U	8.3	U
6:2 FTS	N/A	ng/L	1680		5710		5670		1430		441		57.7		8	U	8.3	U	8.3	U
8:2 FTS	N/A	ng/L	22.5		202		199		70		6.3	J	8	U	8	U	8.3	U	8.3	U
GenX	6	ng/L	**10**	**U**	**8**	**U**	**8.3**	**U**	**8**	**U**	**9.1**	**U**	**8**	**U**	**8**	**U**	**8.3**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
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RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1006		S014-DPT1006		S014-DPT1007		S014-DPT1007		S014-DPT1007		S014-DPT1007		S014-DPT1007		S014-DPT1008	
Sample ID:			S014-DPT1006-035.0-20220301		S014-DPT1006-045.0-20220301		S014-DPT1007-005.0-20220301		S014-DPT1007-015.0-20220301		S014-DPT1007-025.0-20220301		S014-FD-20220301		S014-DPT1007-035.0-20220301		S014-DPT1007-045.0-20220301		S014-DPT1008-005.0-20220301	
Depth Interval:			33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs	
Sample Date			3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/1/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	9.5	U	8	U	5.6	J	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
PFPeA	N/A	ng/L	5.2	J	5.5	J	4.6	J	7	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFHxA	N/A	ng/L	6.2	J	4.7	J	5	J	7.2	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFHpA	N/A	ng/L	2.8	J	3.1	J	3.5	J	5.4	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFOA	6	ng/L	**6.5**	**J**	4.8	J	**8.1**		4.7	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFNA	6	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFDA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFUnA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFDoA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFTriA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFTeA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	20	U	22	U	4.2	U	5.2	U
PFBS	601	ng/L	4.1	J	4	U	4	U	2.3	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFPeS	N/A	ng/L	4	J	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFHxS	39	ng/L	22.2		9		7.9	J	3	J	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFHpS	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFOS	4	ng/L	**44.7**		**19.8**		**18.5**		4	U	**4.2**	**U**	4	U	**4.3**	**U**	**4.2**	**U**	**5.2**	**U**
PFNS	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFDS	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	4.2	U	5.2	U
PFOSA	N/A	ng/L	4.8	U	4	U	4	U	4	U	4.2	U	4	U	4.3	U	2.6	J	5.2	U
NMeFOSAA	N/A	ng/L	9.5	U	8	U	8	U	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
NEtFOSAA	N/A	ng/L	9.5	U	8	U	8	U	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
4:2 FTS	N/A	ng/L	9.5	U	8	U	8	U	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
6:2 FTS	N/A	ng/L	9.5	U	4.8	J	8	U	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
8:2 FTS	N/A	ng/L	9.5	U	8	U	8	U	8	U	8.3	U	8	U	8.7	U	8.3	U	10	U
GenX	6	ng/L	**9.5**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.3**	**U**	**8**	**U**	**8.7**	**U**	**8.3**	**U**	**10**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1008		S014-DPT1008		S014-DPT1008		S014-DPT1008		S014-DPT1009		S014-DPT1009		S014-DPT1009		S014-DPT1009		S014-DPT1009	
Sample ID:			S014-DPT1008-015.0-20220301		S014-DPT1008-025.0-20220301		S014-DPT1008-035.0-20220301		S014-DPT1008-045.0-20220301		S014-DPT1009-005.0-20220302		S014-DPT1009-015.0-20220302		S014-DPT1009-025.0-20220302		S014-DPT1009-035.0-20220302		S014-DPT1009-045.0-20220302	
Depth Interval:			13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date			3/1/2022		3/1/2022		3/1/2022		3/1/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	40	U	7.1	J	4.4	J	40	U	42.6	J	98.1		6.3	J	44.8		201	
PFPeA	N/A	ng/L	13	J	2.7	J	4	U	20	U	29.8	J	295		10.6		61.7		304	
PFHxA	N/A	ng/L	8.2		2.3	J	4	U	4	U	30.6	J	404		46.4		183		915	
PFHpA	N/A	ng/L	4.5	J	4.2	U	4	U	4	U	10.7		122		6	J	24.5		151	
PFOA	6	ng/L	3.8	J	3.4	J	5.1	J	4.8	J	**11.4**		**190**		**20.8**		**18.3**		**239**	
PFNA	6	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	**6.6**	**J**	4.5	U	4	U	4.2	U
PFDA	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFUnA	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFDoA	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFTriA	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFTeA	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFBS	601	ng/L	3.6	J	4.2	U	4	U	4	U	14.7	J	160		32		255		**1090**	
PFPeS	N/A	ng/L	4.2	J	4.2	U	4	U	4	U	16.5	J	221		45.8		208		1020	
PFHxS	39	ng/L	21.2		4.4	J	4.1	J	3.5	J	**151**		**2540**		**463**		**376**		**3480**	
PFHpS	N/A	ng/L	4	U	4.2	U	4	U	4	U	7.1	J	172		12.5		3.5	J	225	
PFOS	4	ng/L	**16.2**		**18.9**		**21.3**		2.4	J	**267**		**9290**		**50.6**		**69.8**		**685**	
PFNS	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	10.7		4.5	U	4	U	4.2	U
PFDS	N/A	ng/L	4	U	4.2	U	4	U	4	U	4.5	U	4.5	U	4.5	U	4	U	4.2	U
PFOSA	N/A	ng/L	4	U	4.2	U	4	U	4	U	23	U	4.5	U	4.5	U	4	U	4.2	U
NMeFOSAA	N/A	ng/L	8	U	8.3	U	8	U	8	U	9.1	U	9.1	U	9.1	U	8	U	8.3	U
NEtFOSAA	N/A	ng/L	8	U	8.3	U	8	U	8	U	9.1	U	9.1	U	9.1	U	8	U	8.3	U
4:2 FTS	N/A	ng/L	8	U	8.3	U	8	U	8	U	9.1	U	11.3	J	9.1	U	8	U	10	J
6:2 FTS	N/A	ng/L	4.6	J	8.3	U	8	U	8	U	20.4		436		9.1	U	8	U	20.4	
8:2 FTS	N/A	ng/L	8	U	8.3	U	8	U	8	U	9.1	U	4.7	J	9.1	U	8	U	8.3	U
GenX	6	ng/L	**8**	**U**	**8.3**	**U**	**8**	**U**	**8**	**U**	**9.1**	**U**	**9.1**	**U**	**9.1**	**U**	**8**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
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RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1009		S014-DPT1010		S014-DPT1010		S014-DPT1010		S014-DPT1010		S014-DPT1010		S014-DPT1011		S014-DPT1011		S014-DPT1011	
Sample ID:			S014-FD-20220302		S014-DPT1010-005.0-20220302		S014-DPT1010-015.0-20220302		S014-DPT1010-025.0-20220302		S014-DPT1010-035.0-20220302		S014-DPT1010-045.0-20220302		S014-DPT1011-005.0-20220302		S014-DPT1011-015.0-20220302		S014-DPT1011-025.0-20220302	
Depth Interval:			43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs	
Sample Date			3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022		3/2/2022	
Sample Type:			Duplicate		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	203		10	U	11.5	J	43	U	8.3	U	10	U	5.4	J	193		150	
PFPeA	N/A	ng/L	317		5	U	4.3	U	22	U	4.7	J	5	U	5	U	630		555	
PFHxA	N/A	ng/L	951		5	U	4.3	U	2.7	J	4.3	J	5	U	5	U	589		455	
PFHpA	N/A	ng/L	156		5	U	4.3	U	4.3	U	2.6	J	5	U	5	U	448		301	
PFOA	6	ng/L	**246**		5	U	4.3	U	2.8	J	4.8	J	5	U	5	U	**502**		**201**	
PFNA	6	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	**65.7**		**7.2**	**J**
PFDA	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	8.7		4	U
PFUnA	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	4.3	U	4	U
PFDoA	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	4.3	U	4	U
PFTriA	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	4.3	U	4	U
PFTeA	N/A	ng/L	4.3	U	5	U	22	U	4.3	U	4.2	U	5	U	5	U	4.3	U	4	U
PFBS	601	ng/L	**1120**		5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	140		98.5	
PFPeS	N/A	ng/L	1020		5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	207		131	
PFHxS	39	ng/L	**3540**		5	U	4.3	U	9.7		14.1		3.7	J	13.8		**3330**		**1410**	
PFHpS	N/A	ng/L	229		5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	183		74.9	
PFOS	4	ng/L	**770**		**5**	**U**	**4.3**	**U**	**27.4**		**11.8**		**5**	**U**	**31.8**		**8190**		**5620**	
PFNS	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	27.3		4	U
PFDS	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	5	U	4.3	U	4	U
PFOSA	N/A	ng/L	4.3	U	5	U	4.3	U	4.3	U	4.2	U	5	U	25	U	87	U	4	U
NMeFOSAA	N/A	ng/L	8.7	U	10	U	8.7	U	8.7	U	8.3	U	10	U	10	U	8.7	U	8	U
NEtFOSAA	N/A	ng/L	8.7	U	10	U	8.7	U	8.7	U	8.3	U	10	U	10	U	8.7	U	8	U
4:2 FTS	N/A	ng/L	10.5	J	10	U	8.7	U	8.7	U	8.3	U	10	U	10	U	67.6		77.6	
6:2 FTS	N/A	ng/L	22.1		10	U	8.7	U	8.7	U	8.3	U	10	U	10	U	2160		1040	
8:2 FTS	N/A	ng/L	8.7	U	10	U	8.7	U	8.7	U	8.3	U	10	U	10	U	1810		7.6	J
GenX	6	ng/L	**8.7**	**U**	**10**	**U**	**8.7**	**U**	**43**	**U**	**8.3**	**U**	**10**	**U**	**10**	**U**	**8.7**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
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RSL < Detection Limit
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100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1011		S014-DPT1011		S014-DPT1011		S014-DPT1012		S014-DPT1012		S014-DPT1012		S014-DPT1012		S014-DPT1012		S014-DPT1013	
Sample ID:			S014-DPT1011-035.0-20220302		S014-DPT1011-045.0-20220302		S014-FD-20220302		S014-DPT1012-005.0-20220303		S014-DPT1012-015.0-20220303		S014-DPT1012-025.0-20220303		S014-DPT1012-035.0-20220303		S014-DPT1012-045.0-20220303		S014-DPT1013-005.0-20220303	
Depth Interval:			33 - 37 ft bgs		43 - 47 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs	
Sample Date			3/2/2022		3/2/2022		3/2/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022	
Sample Type:			Normal		Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	521		8.3	J	18.6		24.1	J	4.8	J	5.5	J	8.3	U	8	U	4.5	J
PFPeA	N/A	ng/L	1980		23.4		35.3		20	U	4.2	U	5	J	5.8	J	4	U	4	U
PFHxA	N/A	ng/L	1720		23.6		30.7		20	U	4.2	U	4	J	4.4	J	4	U	2.9	J
PFHpA	N/A	ng/L	1330		13.1		21		20	U	4.2	U	3.3	J	2.7	J	4	U	4	U
PFOA	6	ng/L	**1500**		**15.1**		**22.9**		**20**	**U**	2.6	J	**9.9**		**7.1**	**J**	4	U	2.6	J
PFNA	6	ng/L	**53.6**	**J**	4.2	U	**12.3**		**20**	**U**	4.2	U	4.2	U	4.2	U	4	U	4	U
PFDA	N/A	ng/L	4.3	U	4.2	U	10.9		20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFUnA	N/A	ng/L	4.3	U	4.2	U	13		20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFDoA	N/A	ng/L	4.3	U	4.2	U	14.1		20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFTriA	N/A	ng/L	4.3	U	4.2	U	14.4		20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFTeA	N/A	ng/L	4.3	U	4.2	U	11.8		20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFBS	601	ng/L	224		16.2		17.1		20	U	4.2	U	4.2	U	4.2	U	4	U	57.1	
PFPeS	N/A	ng/L	315		12.6		13		20	U	4.2	U	4.2	U	4.2	U	4	U	33.2	
PFHxS	39	ng/L	**3600**		**71.1**		**61.9**		20	U	3.1	J	6.3	J	8.6		4	U	**63.1**	
PFHpS	N/A	ng/L	319		4.8	J	3.5	J	20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFOS	4	ng/L	**28900**		**494**		**358**		**20**	**U**	**19.8**		**31.5**		**11.4**		4	U	**124**	
PFNS	N/A	ng/L	43	U	4.2	U	4.2	U	20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFDS	N/A	ng/L	4.3	U	4.2	U	4.2	U	20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
PFOSA	N/A	ng/L	43	U	4.2	U	4.2	U	20	U	4.2	U	4.2	U	4.2	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8.7	U	8.3	U	8.3	U	40	U	8.3	U	8.3	U	8.3	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8.7	U	8.3	U	8.3	U	40	U	8.3	U	8.3	U	8.3	U	8	U	8	U
4:2 FTS	N/A	ng/L	494		6	J	5.5	J	40	U	8.3	U	8.3	U	8.3	U	8	U	8	U
6:2 FTS	N/A	ng/L	19100		150		122		40	U	8.3	U	8.3	U	8.3	U	8	U	8	U
8:2 FTS	N/A	ng/L	67.3		8.5	J	4.5	J	40	U	8.3	U	8.3	U	8.3	U	8	U	8	U
GenX	6	ng/L	**8.7**	**U**	**8.3**	**U**	**8.3**	**U**	**40**	**U**	**8.3**	**U**	**8.3**	**U**	**8.3**	**U**	**8**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
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100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1013		S014-DPT1013		S014-DPT1013		S014-DPT1013		S014-DPT1014		S014-DPT1014		S014-DPT1014		S014-DPT1014	
Sample ID:			S014-DPT1013-015.0-20220303		S014-FD-20220303		S014-DPT1013-025.0-20220303		S014-DPT1013-035.0-20220303		S014-DPT1013-045.0-20220303		S014-DPT1014-005.0-20220304		S014-FD-20220304		S014-DPT1014-015.0-20220304		S014-DPT1014-025.0-20220304	
Depth Interval:			13 - 17 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs	
Sample Date			3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/4/2022		3/4/2022		3/4/2022		3/4/2022	
Sample Type:			Normal		Duplicate		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	7.9	J	8	J	12.6	J	17.6		4.9	J	4.7	J	4.9	J	15.9	J	6.3	J
PFPeA	N/A	ng/L	5.1	J	5	J	11.6		24.3		8	J	4	U	4	U	11.5		13.4	
PFHxA	N/A	ng/L	11.5		11.4		11.2		18.7		5.1	J	4	U	4	U	11.8		21.9	
PFHpA	N/A	ng/L	3.1	J	2.8	J	6.4	J	9.7		3.6	J	4	U	4	U	5.2	J	5.6	J
PFOA	6	ng/L	**12.6**		**12.5**		**11.8**		**13.4**		**6.3**	**J**	4	U	4	U	**7.4**	**J**	**10.8**	
PFNA	6	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFDA	N/A	ng/L	4	U	4	U	4.2	U	2.8	J	4.2	U	4	U	4	U	4	U	4.3	U
PFUnA	N/A	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFDoA	N/A	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFTriA	N/A	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFTeA	N/A	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	20	U	20	U	4	U	4.3	U
PFBS	601	ng/L	44.6		45.1		4	J	4.8	J	2.4	J	4	U	4	U	8.4		13.2	
PFPeS	N/A	ng/L	36.2		35.5		4.2	J	6	J	4.2	U	4	U	4	U	10.4		16.8	
PFHxS	39	ng/L	**117**		**121**		**50**		**87.8**		12.5		2.2	J	2.1	J	**64.6**		**92**	
PFHpS	N/A	ng/L	3.9	J	4.2	J	2.4	J	4.3	J	4.2	U	4	U	4	U	4	J	5.2	J
PFOS	4	ng/L	**118**		**120**		**57.2**		**91.5**		**32.7**		**5.3**	**J**	**5.2**	**J**	**117**		**258**	
PFNS	N/A	ng/L	4	U	4	U	4.2	U	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFDS	N/A	ng/L	4	U	4	U	4.5	J	4.2	U	4.2	U	4	U	4	U	4	U	4.3	U
PFOSA	N/A	ng/L	4	U	4	U	3.6	J	28.1		4.2	U	4	U	4	U	4	U	2.7	J
NMeFOSAA	N/A	ng/L	8	U	8	U	8.3	U	8.3	U	8.3	U	8	U	8	U	8	U	8.7	U
NEtFOSAA	N/A	ng/L	8	U	8	U	17.6		54.9		8.3	U	8	U	8	U	8	U	8.7	U
4:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8.3	U	8.3	U	8	U	8	U	8	U	8.7	U
6:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8.3	U	8.3	U	8	U	8	U	4.6	J	9.7	J
8:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8.3	U	8.3	U	8	U	8	U	8	U	8.7	U
GenX	6	ng/L	**8**	**U**	**8**	**U**	**8.3**	**U**	**8.3**	**U**	**8.3**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.7**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1014	S014-DPT1014	S014-DPT1015	S014-DPT1015	S014-DPT1015	S014-DPT1015	S014-DPT1015	S014-DPT1016	S014-DPT1016
Sample ID:			S014-DPT1014-035.0-20220304	S014-DPT1014-045.0-20220304	S014-DPT1015-005.0-20220304	S014-DPT1015-015.0-20220304	S014-DPT1015-025.0-20220304	S014-DPT1015-035.0-20220304	S014-DPT1015-045.0-20220304	S014-DPT1016-005.0-20220617	S014-DPT1016-015.0-20220617
Depth Interval:			33 - 37 ft bgs	43 - 47 ft bgs	3 - 7 ft bgs	13 - 17 ft bgs	23 - 27 ft bgs	33 - 37 ft bgs	43 - 47 ft bgs	3 - 7 ft bgs	13 - 17 ft bgs
Sample Date			3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	6/17/2022	6/17/2022
Sample Type:			Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Acronym	RSL[(1)]	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	9.9 J	8 U	8 U	10.4 J	8 U	8 U	8 U	8 U	8 U
PFPeA	N/A	ng/L	35.2	4 U	3.1 J	5.1 J	4 U	4 U	4 U	4 U	4 U
PFHxA	N/A	ng/L	44.2	2.3 J	2.4 J	5.2 J	4 U	4 U	4 U	4 U	4 U
PFHpA	N/A	ng/L	18.5	4 U	4 U	2 J	4 U	4 U	4 U	4 U	4 U
PFOA	6	ng/L	**25.4**	4 U	4 U	2.9 J	4 U	4 U	4 U	4 U	4 U
PFNA	6	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFUnA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDoA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTriA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTeA	N/A	ng/L	4 U	4 U	20 U	4 U	4 U	20 U	4 U	4 U	4 U
PFBS	601	ng/L	17	4 U	4 U	3.5 J	4 U	4 U	4 U	4 U	4 U
PFPeS	N/A	ng/L	22.4	4 U	4 U	3.9 J	4 U	4 U	4 U	4 U	4 U
PFHxS	39	ng/L	**161**	3.5 J	5.2 J	32.9	2.6 J	4 U	4 U	4 U	4 U
PFHpS	N/A	ng/L	10.4	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOS	4	ng/L	**373**	**4.9 J**	**6.1 J**	**29.6**	4 U	4 U	4 U	3.1 J	4 U
PFNS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOSA	N/A	ng/L	4 U	4 U	20 U	4 U	4 U	4 U	4 U	4 U	4 U
NMeFOSAA	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
NEtFOSAA	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
4:2 FTS	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
6:2 FTS	N/A	ng/L	20.8	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
8:2 FTS	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
GenX	6	ng/L	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1016		S014-DPT1016		S014-DPT1016		S014-DPT1017		S014-DPT1017		S014-DPT1017		S014-DPT1017		S014-DPT1017	
Sample ID:			S014-DPT1016-025.0-20220617		S014-DPT1016-035.0-20220617		S014-DPT1016-045.0-20220617		S014-DPT1017-005.0-20220617		S014-DPT1017-015.0-20220617		S014-DPT1017-025.0-20220617		S014-DPT1017-035.0-20220617		S014-FD-20220617-01		S014-DPT1017-045.0-20220617	
Depth Interval:			23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date			6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8.3	U	40	U	8	U	4	U	8	U	8	U	40	U	8	U	8	U
PFPeA	N/A	ng/L	4.2	U	20	U	4	U	4	U	4	U	4	U	20	U	4	U	4	U
PFHxA	N/A	ng/L	4.2	U	20	U	4	U	4	U	4	U	4	U	20	U	4	U	4	U
PFHpA	N/A	ng/L	4.2	U	20	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFOA	6	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFNA	6	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFDA	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	21	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	21	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	21	U	4	U	4	U	4	U	4	U	20	U	20	U	4	U	4	U
PFBS	601	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	20	U	4	U	4	U
PFPeS	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	20	U	4	U	4	U
PFHxS	39	ng/L	2.3	J	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFHpS	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFOS	4	ng/L	**4.2**	**U**	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFNS	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	4.2	U	4	U	4	U	4	U	4	U	20	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8.3	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8.3	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8.3	U	40	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8.3	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	8.3	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
GenX	6	ng/L	**8.3**	**U**	**40**	**U**	**8**	**U**	**40**	**U**	**8**	**U**	**40**	**U**	**8**	**U**	**8**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
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ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.
RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1018		S014-DPT1018		S014-DPT1018		S014-DPT1018		S014-DPT1018		S014-DPT1019		S014-DPT1019		S014-DPT1019		S014-DPT1019	
Sample ID:			S014-DPT1018-005.0-20220617		S014-DPT1018-015.0-20220617		S014-DPT1018-025.0-20220617		S014-DPT1018-035.0-20220617		S014-DPT1018-045.0-20220617		S014-DPT1019-005.0-20220617		S014-FD-20220617-02		S014-DPT1019-015.0-20220617		S014-DPT1019-025.0-20220617	
Depth Interval:			3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs	
Sample Date			6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022		6/17/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	13.2	J	10.5	J	26.4		10.8	J	4.9	J	69.6	J	71.3	J	25.2		8	U
PFPeA	N/A	ng/L	2.5	J	3.8	J	4.2	J	3.2	J	4.1	J	20	U	24	U	2.2	J	12	
PFHxA	N/A	ng/L	4.5	U	2.3	J	2.1	J	3.2	J	3.7	J	20	U	24	U	2.2	J	4	U
PFHpA	N/A	ng/L	4.5	U	4.5	U	4	U	4.6	J	6.3	J	20	U	24	U	4	U	4	U
PFOA	6	ng/L	4.5	U	4.5	U	**7.4**	**J**	**18.4**		**15.9**		4	U	4.8	U	3.4	J	4	U
PFNA	6	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFDA	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFUnA	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFDoA	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFTriA	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFTeA	N/A	ng/L	23	U	23	U	4	U	4	U	4	U	20	U	24	U	4	U	4	U
PFBS	601	ng/L	4.5	U	23	U	20	U	4	U	20	U	20	U	24	U	20	U	4	U
PFPeS	N/A	ng/L	4.5	U	23	U	20	U	4	U	20	U	20	U	24	U	20	U	4	U
PFHxS	39	ng/L	4.5	U	6.2	J	12.2		6.3	J	20.6		4	U	4.8	U	6	J	4	U
PFHpS	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFOS	4	ng/L	**10.8**		**13**		**24.3**		**14.1**		**19.6**		4	U	**4.8**	**U**	**10.1**		4	U
PFNS	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFDS	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	4	U	4.8	U	4	U	4	U
PFOSA	N/A	ng/L	4.5	U	4.5	U	4	U	4	U	4	U	20	U	24	U	4	U	4	U
NMeFOSAA	N/A	ng/L	9.1	U	9.1	U	8	U	8	U	8	U	8	U	9.5	U	8	U	8	U
NEtFOSAA	N/A	ng/L	9.1	U	9.1	U	8	U	8	U	8	U	8	U	9.5	U	8	U	8	U
4:2 FTS	N/A	ng/L	9.1	U	45	U	40	U	8	U	40	U	40	U	48	U	40	U	8	U
6:2 FTS	N/A	ng/L	9.1	U	9.1	U	8	U	8	U	8	U	8	U	9.5	U	8	U	8	U
8:2 FTS	N/A	ng/L	9.1	U	9.1	U	8	U	8	U	8	U	8	U	9.5	U	8	U	8	U
GenX	6	ng/L	**9.1**	**U**	**45**	**U**	**40**	**U**	**8**	**U**	**40**	**U**	**40**	**U**	**48**	**U**	**40**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
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RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-1
SWMU 014
Groundwater Analytical Results

DPT Sample Location:			S014-DPT1019		S014-DPT1019		S014-DPT1020		S014-DPT1020		S014-DPT1020		S014-DPT1020		PFAS-DPT0180	
Sample ID:			S014-DPT1019-035.0-20220617		S014-DPT1019-045.0-20220617		S014-DPT1020-015.0-20220622		S014-DPT1020-025.0-20220622		S014-DPT1020-035.0-20220622		S014-DPT1020-045.0-20220622		S014-FD-20220622-01		PFAS-DPT0180-055.0-20220228	
Depth Interval:			33 - 37 ft bgs		43 - 47 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		43 - 47 ft bgs		53 - 57 ft bgs	
Sample Date			6/17/2022		6/17/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		2/28/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal	
Acronym	RSL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	8	U	8	U	4.8	J	8	U	8	U	8.7	U	8	U
PFPeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFHxA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	2.4	J
PFHpA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFOA	6	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFNA	6	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFBS	601	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFPeS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFHxS	39	ng/L	4	U	4	U	4	U	7.1	J	4.3	J	4	U	4.3	U	6.9	J
PFHpS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFOS	4	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	**4.3**	**U**	2.6	J
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
PFOSA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.3	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.7	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.7	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.7	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.7	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.7	U	8	U
GenX	6	ng/L	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.7**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-2
SWMU 014
Groundwater Summary Statistics

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	Depth Interval of Maximum Concentration	RSL [1]	Number of Detections Exceeding RSL	Number of Detection Limits Exceeding RSL
Carboxylates	PFBA	116	54	4.4	900	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFPeA	116	55	2.2	3470	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFHxA	116	61	2.1	3740	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFHxA	116	49	2	1330	S014-DPT1011	33 - 37 ft bgs	N/A		
	PFOA	116	62	2.3	1500	S014-DPT1011	33 - 37 ft bgs	6	43	1
	PFNA	116	18	2.5	97.8	S014-DPT1005	13 - 17 ft bgs	6	12	1
	PFDA	116	8	2.2	39.7	S014-DPT1003	43 - 47 ft bgs	N/A		
	PFUnA	116	2	13	43.3	S014-DPT1003	43 - 47 ft bgs	N/A		
	PFDoA	116	2	14.1	44.7	S014-DPT1003	43 - 47 ft bgs	N/A		
	PFTriA	116	2	14.4	49.7	S014-DPT1003	43 - 47 ft bgs	N/A		
	PFTeA	116	2	11.8	37.3	S014-DPT1003	43 - 47 ft bgs	N/A		
Sulfonates	PFBS	116	36	2.3	1230	S014-DPT1005	13 - 17 ft bgs	601	4	0
	PFPeS	116	35	3.2	1350	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFHxS	116	74	2.1	10600	S014-DPT1005	13 - 17 ft bgs	39	32	0
	PFHpS	116	30	2.4	723	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFOS	116	74	2.4	50200	S014-DPT1005	13 - 17 ft bgs	4	67	12
	PFNS	116	5	10.6	93.8	S014-DPT1005	13 - 17 ft bgs	N/A		
	PFDS	116	1	4.5	4.5	S014-DPT1005	33 - 37 ft bgs	N/A		
Precursors / Fluorotelomers	PFOSA	116	10	2.4	28.1	S014-DPT1013	33 - 37 ft bgs	N/A		
	NMeFOSAA	116	0	No Detections	No Detections	No Detections	No Detections	N/A		
	NEtFOSAA	116	2	17.6	54.9	S014-DPT1013	33 - 37 ft bgs	N/A		
	4:2 FTS	116	13	5.5	494	S014-DPT1011	33 - 37 ft bgs	N/A		
	6:2 FTS	116	23	4.6	19100	S014-DPT1011	33 - 37 ft bgs	N/A		
	8:2 FTS	116	11	4.5	1810	S014-DPT1011	13 - 17 ft bgs	N/A		
	GenX	116	0	No Detections	No Detections	No Detections	No Detections	6	0	116

Notes:
(1) Regional Screening Level Resident Tap Water Table (TR=1E-06, HQ=0.1) (U.S. Environmental Protection Agency, 2022)
ng/L = nanograms per liter
bgs = below ground surface
ft =feet
RSL = Regional Screening Level
N/A = not established

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0074		PFAS-DPT0074		PFAS-DPT0183		S118-DPT1000		S118-DPT1000		S118-DPT1000		S118-DPT1000		S118-DPT1000		S118-DPT1000	
Sample ID:			PFAS-DPT0074-055.0-20220304		PFAS-FD-20220304-1		PFAS-DPT0183-055.0-20220303		S118-DPT1000-005.0-20220223		S118-DPT1000-015.0-20220223		S118-FD-20220223-01		S118-DPT1000-025.0-20220223		S118-DPT1000-035.0-20220223		S118-DPT1000-045.0-20220223	
Depth Interval:			53 - 57 ft bgs		53 - 57 ft bgs		53 - 57 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date:			3/4/2022		3/4/2022		3/3/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022	
Sample Type:			Normal		Duplicate		Normal		Normal		Normal		Duplicate		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	8	U	5.8	J	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
PFPeA	N/A	ng/L	4	U	4	U	4.5	J	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFHxA	N/A	ng/L	4	U	4	U	5.6	J	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFHpA	N/A	ng/L	4	U	4	U	3.1	J	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFOA	6	ng/L	4	U	4	U	3.5	J	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFNA	6	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFDA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFUnA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFDoA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFTriA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFTeA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFBS	601	ng/L	4	U	4	U	3	J	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFPeS	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFHxS	39	ng/L	4	U	4	U	10.6		8.3		3.1	J	2.6	J	4.5	U	4.2	U	4.2	U
PFHpS	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFOS	4	ng/L	4	U	4	U	**4.7**	**J**	**4.2**	**U**	2.3	J	**4.2**	**U**	**4.5**	**U**	**4.2**	**U**	**4.2**	**U**
PFNS	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFDS	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
PFOSA	N/A	ng/L	4	U	4	U	4.3	U	4.2	U	4.2	U	4.2	U	4.5	U	4.2	U	4.2	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8.7	U	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8.7	U	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
4:2 FTS	N/A	ng/L	8	U	8	U	8.7	U	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
6:2 FTS	N/A	ng/L	8	U	8	U	8.7	U	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
8:2 FTS	N/A	ng/L	8	U	8	U	8.7	U	8.3	U	8.3	U	8.3	U	9.1	U	8.3	U	8.3	U
GenX	6	ng/L	**8**	**U**	**8**	**U**	**8.7**	**U**	**8.3**	**U**	**8.3**	**U**	**8.3**	**U**	**9.1**	**U**	**8.3**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1001		S118-DPT1001		S118-DPT1001		S118-DPT1001		S118-DPT1001		S118-DPT1002		S118-DPT1002		S118-DPT1002		S118-DPT1002	
Sample ID:			S118-DPT1001-005.0-20220223		S118-DPT1001-015.0-20220223		S118-DPT1001-025.0-20220223		S118-DPT1001-035.0-20220223		S118-DPT1001-045.0-20220223		S118-DPT1002-005.0-20220223		S118-DPT1002-015.0-20220223		S118-DPT1002-025.0-20220223		S118-DPT1002-035.0-20220223	
Depth Interval:			3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs	
Sample Date:			2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022		2/23/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	13.6	J	12.7	J	20.4		23.3		8.3	U	8.3	U	18	U	6.6	J	9.1	J
PFPeA	N/A	ng/L	32.4		39.7		64.7		76.3		4.2	U	4.2	U	9	U	7.3	J	23.1	
PFHxA	N/A	ng/L	50.3		72.5		75.2		112		4.2	U	4.2	U	9	U	9.5		42	
PFHpA	N/A	ng/L	17		20.3		32.5		39.3		4.2	U	4.2	U	9	U	2.6	J	10.2	
PFOA	6	ng/L	**33.6**		**44.5**		**52**		**67.3**		4.2	U	4.2	U	**9**	**U**	5	J	**17.9**	
PFNA	6	ng/L	4.5	U	4	U	2.8	J	3.9	J	4.2	U	4.2	U	**9**	**U**	4	U	4.2	U
PFDA	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFUnA	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFDoA	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFTriA	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFTeA	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFBS	601	ng/L	17.1		25.7		24.9		32.4		4.2	U	4.2	U	9	U	7.7	J	21.9	
PFPeS	N/A	ng/L	24.2		32.9		32.3		42.8		4.2	U	4.2	U	9	U	7.4	J	25.9	
PFHxS	39	ng/L	**181**		**216**		**277**		**345**		4	J	4.2	U	9	U	**41.3**		**163**	
PFHpS	N/A	ng/L	11.5		17.5		21.4		27.5		4.2	U	4.2	U	9	U	2.8	J	10.8	
PFOS	4	ng/L	**166**		**540**		**1070**		**1510**		**19**		**4.2**	**U**	**9**	**U**	**35.8**		**173**	
PFNS	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFDS	N/A	ng/L	4.5	U	4	U	4	U	4	U	4.2	U	4.2	U	9	U	4	U	4.2	U
PFOSA	N/A	ng/L	4.5	U	2.5	J	20.9		41.8		4.2	U	4.2	U	9	U	4	U	4.2	U
NMeFOSAA	N/A	ng/L	9.1	U	8	U	8	U	8	U	8.3	U	8.3	U	18	U	8	U	8.3	U
NEtFOSAA	N/A	ng/L	9.1	U	8	U	8	U	8	U	8.3	U	8.3	U	18	U	8	U	8.3	U
4:2 FTS	N/A	ng/L	9.1	U	8	U	8	U	8	U	8.3	U	8.3	U	18	U	8	U	8.3	U
6:2 FTS	N/A	ng/L	13	J	16.2		30.6		37.6		8.3	U	8.3	U	18	U	8	U	9.3	J
8:2 FTS	N/A	ng/L	9.1	U	8	U	8	U	4.8	J	8.3	U	8.3	U	18	U	8	U	8.3	U
GenX	6	ng/L	**9.1**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.3**	**U**	**8.3**	**U**	**18**	**U**	**8**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1002		S118-DPT1003		S118-DPT1003		S118-DPT1003		S118-DPT1003		S118-DPT1003		S118-DPT1004		S118-DPT1004	
Sample ID:			S118-DPT1002-045.0-20220223		S118-DPT1003-005.0-20220224		S118-DPT1003-015.0-20220224		S118-DPT1003-025.0-20220224		S118-DPT1003-035.0-20220224		S118-DPT1003-045.0-20220224		S118-FD-20220224-01		S118-DPT1004-005.0-20220224		S118-DPT1004-015.0-20220224	
Depth Interval:			43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs	
Sample Date:			2/23/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	5.8	J	8.3	U	8	U	8	U	9.1	U	8	U	9.5	J	6.4	J
PFPeA	N/A	ng/L	3.1	J	2.9	J	4.2	U	4	U	2.6	J	4.5	U	4	U	9.1	U	3.9	J
PFHxA	N/A	ng/L	7.8	J	4.2	U	4.2	U	4	U	2	J	4.5	U	4	U	9.1	U	6.3	J
PFHpA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	2.3	J
PFOA	6	ng/L	3	J	4.2	U	4.2	U	2.8	J	4	U	4.5	U	4	U	**9.1**	**U**	4.1	J
PFNA	6	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	**9.1**	**U**	4.2	U
PFDA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFUnA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFDoA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFTriA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFTeA	N/A	ng/L	4	U	21	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFBS	601	ng/L	4.8	J	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	11.4	
PFPeS	N/A	ng/L	5.4	J	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	17.5	
PFHxS	39	ng/L	26.6		4.2	U	12		11.3		8.2		4.5	U	4	U	9.1	U	**103**	
PFHpS	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFOS	4	ng/L	**7**	**J**	2.2	J	2.8	J	**5.1**	**J**	3.3	J	**4.5**	**U**	4	U	**12.8**	**J**	**10.3**	
PFNS	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFDS	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
PFOSA	N/A	ng/L	4	U	4.2	U	4.2	U	4	U	4	U	4.5	U	4	U	9.1	U	4.2	U
NMeFOSAA	N/A	ng/L	8	U	8.3	U	8.3	U	8	U	8	U	9.1	U	8	U	18	U	8.3	U
NEtFOSAA	N/A	ng/L	8	U	8.3	U	8.3	U	8	U	8	U	9.1	U	8	U	18	U	8.3	U
4:2 FTS	N/A	ng/L	8	U	8.3	U	8.3	U	8	U	8	U	9.1	U	8	U	18	U	8.3	U
6:2 FTS	N/A	ng/L	8	U	8.3	U	8.3	U	8	U	8	U	9.1	U	8	U	18	U	8.3	U
8:2 FTS	N/A	ng/L	8	U	8.3	U	8.3	U	8	U	8	U	9.1	U	8	U	18	U	8.3	U
GenX	6	ng/L	**8**	**U**	**8.3**	**U**	**8.3**	**U**	**8**	**U**	**8**	**U**	**9.1**	**U**	**8**	**U**	**18**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1004		S118-DPT1004		S118-DPT1004		S118-DPT1005		S118-DPT1005		S118-DPT1005		S118-DPT1005		S118-DPT1005		S118-DPT1005	
Sample ID:			S118-DPT1004-025.0-20220224		S118-DPT1004-035.0-20220224		S118-DPT1004-045.0-20220304		S118-DPT1005-005.0-20220224		S118-DPT1005-015.0-20220224		S118-DPT1005-025.0-20220224		S118-FD-20220224-02		S118-DPT1005-035.0-20220224		S118-DPT1005-045.0-20220224	
Depth Interval:			23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date:			2/24/2022		2/24/2022		3/4/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022		2/24/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	8	U	8	U	7.1	J	25.2		8	U	8.3	U	8	U	8.3	U
PFPeA	N/A	ng/L	4	U	4	U	4	U	4	U	2.6	J	4	U	4.2	U	4	U	4.2	U
PFHxA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFHpA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFOA	6	ng/L	4	U	2	J	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFNA	6	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFBS	601	ng/L	4	U	4	U	4	U	2.6	J	4	U	2.9	J	4.2	U	4	U	4.2	U
PFPeS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFHxS	39	ng/L	4.6	J	6.2	J	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFHpS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFOS	4	ng/L	2.7	J	3.4	J	4	U	**6**	**J**	4	U	4	U	**4.2**	**U**	4	U	**4.2**	**U**
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
PFOSA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4.2	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8.3	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8.3	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8.3	U
6:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8.3	U
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8.3	U
GenX	6	ng/L	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.3**	**U**	**8**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1006		S118-DPT1006		S118-DPT1006		S118-DPT1006		S118-DPT1006		S118-DPT1007		S118-DPT1007		S118-DPT1007	
Sample ID:			S118-DPT1006-005.0-20220303		S118-DPT1006-015.0-20220303		S118-DPT1006-025.0-20220303		S118-DPT1006-035.0-20220303		S118-FD-20220303-01		S118-DPT1006-045.0-20220303		S118-DPT1007-005.0-20220616		S118-DPT1007-015.0-20220616		S118-DPT1007-025.0-20220616	
Depth Interval:			3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs	
Sample Date:			3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022		3/3/2022		6/16/2022		6/16/2022		6/16/2022	
Sample Type:			Normal		Normal		Normal		Normal		Duplicate		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	5.7	J	7.4	J	8.8	J	8.7	J	4.1	J	14	U	40	U	40	U
PFPeA	N/A	ng/L	4	U	2.5	J	4.8	J	6.8	J	6.7	J	5.3	J	6.8	U	20	U	20	U
PFHxA	N/A	ng/L	4	U	5.8	J	11.9		15.7		15.2		7.7	J	6.8	U	4	U	4	U
PFHpA	N/A	ng/L	4	U	4	U	2.6	J	3.7	J	3.4	J	3.7	J	6.8	U	4	U	4	U
PFOA	6	ng/L	4	U	2.6	J	4.3	J	**6.2**	**J**	5.8	J	**6.3**	**J**	**6.8**	**U**	4	U	4	U
PFNA	6	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	**6.8**	**U**	4	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	20	U	20	U
PFBS	601	ng/L	2.2	J	4.3	J	3.8	J	6.1	J	6.2	J	2.5	J	6.8	U	4	U	4	U
PFPeS	N/A	ng/L	4	U	4.4	J	4.8	J	7.8	J	7.3	J	2.6	J	6.8	U	4	U	4	U
PFHxS	39	ng/L	12.7		38.4		**53.1**		**71.1**		**68.3**		21.3		6.8	U	4	U	4	U
PFHpS	N/A	ng/L	4	U	4	U	3.3	J	3.2	J	3.3	J	4	U	6.8	U	4	U	4	U
PFOS	4	ng/L	**23.7**		**23.9**		**192**		**114**		**111**		**10.7**		**6.8**	**U**	4	U	4	U
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	6.8	U	4	U	4	U
PFOSA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	33	U	20	U	20	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	14	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	14	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	14	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	14	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	14	U	8	U	8	U
GenX	6	ng/L	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**14**	**U**	**8**	**U**	**8**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1007	S118-DPT1007	S118-DPT1008	S118-DPT1008	S118-DPT1008	S118-DPT1008	S118-DPT1008	S118-DPT1008	S118-DPT1009
Sample ID:			S118-DPT1007-035.0-20220616	S118-DPT1007-045.0-20220616	S118-DPT1008-005.0-20220616	S118-DPT1008-015.0-20220616	S118-DPT1008-025.0-20220616	S118-DPT1008-035.0-20220616	S118-DPT1008-045.0-20220616	S118-FD-20220616-01	S118-DPT1009-005.0-20220622
Depth Interval:			33 - 37 ft bgs	43 - 47 ft bgs	3 - 7 ft bgs	13 - 17 ft bgs	23 - 27 ft bgs	33 - 37 ft bgs	43 - 47 ft bgs	43 - 47 ft bgs	3 - 7 ft bgs
Sample Date:			6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/22/2022
Sample Type:			Normal	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal
Acronym	RSL [1]	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	40 U	10 U	8 U	40 U	6.7 J	40 U	8 U	8 U	7 J
PFPeA	N/A	ng/L	4 U	5 U	3 J	20 U	9.7	15.7	15.4	15.8	2 J
PFHxA	N/A	ng/L	4 U	5 U	4 U	2.9 J	10.2	7.7 J	5.3 J	6.9 J	4 U
PFHpA	N/A	ng/L	4 U	5 U	4 U	4 U	4.1 J	3.4 J	2.6 J	2.5 J	4 U
PFOA	6	ng/L	4 U	5 U	4 U	4 U	5.3 J	5.6 J	4.5 J	4.2 J	4 U
PFNA	6	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDA	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFUnA	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDoA	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTriA	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTeA	N/A	ng/L	20 U	5 U	20 U	20 U	4 U	20 U	20 U	20 U	4 U
PFBS	601	ng/L	4 U	5 U	4 U	3.5 J	6 J	4.8 J	3.2 J	2.3 J	4 J
PFPeS	N/A	ng/L	4 U	5 U	4 U	4 U	3.8 J	3 J	4 U	4 U	4 U
PFHxS	39	ng/L	4 U	5 U	4 U	5.7 J	30.3	21.4	10.3	9.6	4 J
PFHpS	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOS	4	ng/L	4 U	**5 U**	4 U	**4.6 J**	**32.2**	**10.9**	4 U	4 U	2.6 J
PFNS	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDS	N/A	ng/L	4 U	5 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOSA	N/A	ng/L	4 U	25 U	4 U	20 U	20 U	20 U	20 U	20 U	20 U
NMeFOSAA	N/A	ng/L	8 U	10 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
NEtFOSAA	N/A	ng/L	8 U	10 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
4:2 FTS	N/A	ng/L	8 U	10 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
6:2 FTS	N/A	ng/L	8 U	10 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
8:2 FTS	N/A	ng/L	8 U	10 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
GenX	6	ng/L	**8 U**	**10 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**8 U**	**40 U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-3
SWMU 118
Groundwater Analytical Results

DPT Sample Location:			S118-DPT1009		S118-DPT1009		S118-DPT1009		S118-DPT1009		S118-DPT1010		S118-DPT1010		S118-DPT1010		S118-DPT1010	
Sample ID:			S118-DPT1009-015.0-20220622		S118-DPT1009-025.0-20220622		S118-DPT1009-035.0-20220622		S118-DPT1009-045.0-20220622		S118-DPT1010-005.0-20220622		S118-DPT1010-015.0-20220622		S118-DPT1010-025.0-20220622		S118-DPT1010-035.0-20220622		S118-DPT1010-045.0-20220622	
Depth Interval:			13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 45 ft bgs		3 - 7 ft bgs		13 - 17 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date:			6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022		6/22/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8.7	U	8.9	J	4.7	J	8	U	89.4		8.3	U	8.7	U	8.3	U	8.3	U
PFPeA	N/A	ng/L	4.3	U	5.1	J	6.7	J	4	U	6.7	J	4.2	U	9.8		8.9		4.2	U
PFHxA	N/A	ng/L	2.8	J	14		8.9		5.3	J	5.2	J	4.2	U	10.2		10.7		4.2	U
PFHpA	N/A	ng/L	4.3	U	2.6	J	5.2	J	4	U	7.2	J	4.2	U	4	J	4	J	4.2	U
PFOA	6	ng/L	4.3	U	4.8	J	**9.6**		4.9	J	**49.1**		4.2	U	4.6	J	**6.4**	**J**	4.2	U
PFNA	6	ng/L	4.3	U	4	U	4	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
PFDA	N/A	ng/L	4.3	U	4	U	4	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
PFUnA	N/A	ng/L	4.3	U	4	U	4.2	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
PFDoA	N/A	ng/L	4.3	U	4	U	4.2	U	4	U	4.2	U	4.2	U	4.3	U	4	U	4.2	U
PFTriA	N/A	ng/L	4.3	U	4	U	4.2	U	4	U	4.2	U	4.2	U	4.3	U	4	U	4.2	U
PFTeA	N/A	ng/L	4.3	U	4	U	4.2	U	4	U	4.2	U	4.2	U	4.3	U	4	U	4	U
PFBS	601	ng/L	4.3	U	4.1	J	4	U	4	U	7.7	J	5.9	J	6.8	J	6.8	J	4.2	U
PFPeS	N/A	ng/L	4.3	U	5.7	J	3	J	4	U	6.3	J	3.8	J	7.6	J	7.9	J	4.2	U
PFHxS	39	ng/L	16.8		**47.2**		22.9		9.3		**66.3**		13.4		25.3		35		4.2	U
PFHpS	N/A	ng/L	4.3	U	2.6	J	4	U	4	U	37.8		4.2	U	4.3	U	4.2	U	4.2	U
PFOS	4	ng/L	**42.6**		**91.7**		**15.2**		4	U	**166**		**4.9**	**J**	3.4	J	**7.2**	**J**	**4.2**	**U**
PFNS	N/A	ng/L	4.3	U	4	U	4	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
PFDS	N/A	ng/L	4.3	U	4	U	4	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
PFOSA	N/A	ng/L	4.3	U	4	U	4	U	4	U	4.2	U	4.2	U	4.3	U	4.2	U	4.2	U
NMeFOSAA	N/A	ng/L	8.7	U	8	U	8	U	8	U	8.3	U	8.3	U	8.7	U	8.3	U	8.3	U
NEtFOSAA	N/A	ng/L	8.7	U	8	U	8	U	8	U	8.3	U	8.3	U	8.7	U	8.3	U	8.3	U
4:2 FTS	N/A	ng/L	8.7	U	8	U	8	U	8	U	8.3	U	8.3	U	8.7	U	8.3	U	8.3	U
6:2 FTS	N/A	ng/L	8.7	U	8	U	8	U	8	U	8.3	U	8.3	U	8.7	U	8.3	U	8.3	U
8:2 FTS	N/A	ng/L	8.7	U	8	U	8	U	8	U	8.3	U	8.3	U	8.7	U	8.3	U	8.3	U
GenX	6	ng/L	**8.7**	**U**	**8**	**U**	**8**	**U**	**8**	**U**	**8.3**	**U**	**8.3**	**U**	**8.7**	**U**	**8.3**	**U**	**8.3**	**U**

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

DPT Sample Location:			S118-DPT1010	
Sample ID:			S118-FD-20220622-01	
Depth Interval:			43 - 47 ft bgs	
Sample Date:			6/22/2022	
Sample Type:			Duplicate	
Acronym	RSL [1]	Units	Results	
PFBA	N/A	ng/L	8	U
PFPeA	N/A	ng/L	4	U
PFHxA	N/A	ng/L	4	U
PFHpA	N/A	ng/L	4	U
PFOA	6	ng/L	4	U
PFNA	6	ng/L	4	U
PFDA	N/A	ng/L	4	U
PFUnA	N/A	ng/L	4	U
PFDoA	N/A	ng/L	4	U
PFTriA	N/A	ng/L	4	U
PFTeA	N/A	ng/L	4	U
PFBS	601	ng/L	4	U
PFPeS	N/A	ng/L	4	U
PFHxS	39	ng/L	4	U
PFHpS	N/A	ng/L	4	U
PFOS	4	ng/L	4	U
PFNS	N/A	ng/L	4	U
PFDS	N/A	ng/L	4	U
PFOSA	N/A	ng/L	4	U
NMeFOSAA	N/A	ng/L	8	U
NEtFOSAA	N/A	ng/L	8	U
4:2 FTS	N/A	ng/L	8	U
6:2 FTS	N/A	ng/L	8	U
8:2 FTS	N/A	ng/L	8	U
GenX	6	ng/L	**8**	U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table 4-4
SWMU 118
Groundwater Summary Statistics

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	Depth Interval of Maximum Concentration	RSL [1]	Number of Detections Exceeding RSL	Number of Detection Limits Exceeding RSL
Carboxylates	PFBA	64	22	4.1	89.4	S118-DPT1010	3 - 7 ft bgs	N/A		
	PFPeA	64	28	2	76.3	S118-DPT1001	33 - 37 ft bgs	N/A		
	PFHxA	64	27	2	112	S118-DPT1001	33 - 37 ft bgs	N/A		
	PFHpA	64	21	2.3	39.3	S118-DPT1001	33 - 37 ft bgs	N/A		
	PFOA	64	26	2	67.3	S118-DPT1001	33 - 37 ft bgs	6	10	3
	PFNA	64	2	2.8	3.9	S118-DPT1001	33 - 37 ft bgs	6	0	3
	PFDA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	PFUnA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	PFDoA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	PFTriA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	PFTeA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
Sulfonates	PFBS	64	28	2.2	32.4	S118-DPT1001	33 - 37 ft bgs	601	0	0
	PFPeS	64	21	2.6	42.8	S118-DPT1001	33 - 37 ft bgs	N/A		
	PFHxS	64	38	2.6	345	S118-DPT1001	33 - 37 ft bgs	39	12	0
	PFHpS	64	11	2.6	37.8	S118-DPT1010	3 - 7 ft bgs	N/A		
	PFOS	64	36	2.2	1510	S118-DPT1001	33 - 37 ft bgs	4	28	13
	PFNS	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	PFDS	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
Precursors / Fluorotelomers	PFOSA	64	3	2.5	41.8	S118-DPT1001	33 - 37 ft bgs	N/A		
	NMeFOSAA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	NEtFOSAA	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	4:2 FTS	64	0	No Detections	No Detections	No Detections	No Detections	N/A		
	6:2 FTS	64	5	9.3	37.6	S118-DPT1001	33 - 37 ft bgs	N/A		
	8:2 FTS	64	1	4.8	4.8	S118-DPT1001	33 - 37 ft bgs	N/A		
	GenX	64	0	No Detections	No Detections	No Detections	No Detections	6	0	64

Notes:
(1) Regional Screening Level Resident Tap Water Table (TR=1E-06, HQ=0.1) (U.S. Environmental Protection Agency, 2022)
ng/L = nanograms per liter
bgs = below ground surface
ft =feet
RSL = Regional Screening Level
N/A = not established

Table 4-5
SWMU 014
Surface Water Analytical Results

Sample Location:			S014-SW0001		S014-SW0002		S014-SW0003		S014-SW0003		S014-SW0004		S014-SW0005		S014-SW0006		S014-SW0006		S014-SW0007	
Sample ID:			S014-SW0001-000.0-20220222		S014-SW0002-000.0-20220222		S014-SW0003-000.0-20220222		S014-FD-20220222-01		S014-SW0004-000.0-20220222		S014-SW0005-000.0-20220222		S014-SW0006-000.0-20220615		S014-FD-20220615-01		S014-SW0007-000.0-20220615	
Sample Date:			2/22/2022		2/22/2022		2/22/2022		2/22/2022		2/22/2022		2/22/2022		6/15/2022		6/15/2022		6/15/2022	
Sample Type:			Normal		Normal		Normal		Duplicate		Normal		Normal		Normal		Duplicate		Normal	
Acronym	SW SL[(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	13.7	J	20.1		54.7		49.6		31.5		26.5		23.4		22.3		74.5	
PFPeA	N/A	ng/L	22.8		43.6		148		133		41.2		31.7		31.9		30.7		176	
PFHxA	N/A	ng/L	20.2		38.9		143		127		35.8		26.1		32.4		31		210	
PFHpA	N/A	ng/L	11.5		17.8		68.8		62.2		27.8		14		23.8		23.1		90.8	
PFOA	500	ng/L	11.7		22.3		53.7		50		23.7		11.4		20.6		20.3		81.5	
PFNA	N/A	ng/L	2.3	J	2.7	J	6.1	J	5.4	J	7.7	U	2	J	5.1	J	4.9	J	10	
PFDA	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	10	U	8.3	U	38	U	4	U	4	U	4	U	4	U
PFBS	N/A	ng/L	8.7		11.2		74.2		68.2		12	J	7.4	J	22.8		26.2		127	
PFPeS	N/A	ng/L	9.4		12.8		95.4		88.5		15.8		10.1		23.4		21.6		167	
PFHxS	N/A	ng/L	94.4		95.4		990		900		191		99.4		205		194		1130	
PFHpS	N/A	ng/L	4.5	J	5.9	J	40.9		36.6		6.9	J	4	J	17.3		15.9		62.5	
PFOS	10	ng/L	**239**		**304**		**1710**		**1370**		**107**		**198**		**729**		**705**		**1480**	
PFNS	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	10	U	8.3	U	7.7	U	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	20	U	4	U	7.3	J	6.7	J	4.3	J	2.1	J	4	U	4	U	20	U
NMeFOSAA	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	4.4	J	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	8	U	8	U	8	U	8	U
GenX	N/A	ng/L	8	U	8	U	20	U	17	U	15	U	8	U	8	U	8	U	40	U

Notes:
(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).
ng/L = nanograms per liter
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
SW SL = Surface Water Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.

SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table 4-5
SWMU 014
Surface Water Analytical Results

Sample Location:			S014-SW0008		S014-SW0009		S014-SW0010		S014-SW0011	
Sample ID:			S014-SW0008-000.0-20220615		S014-SW0009-000.0-20220615		S014-SW0010-000.0-20220615		S014-SW0011-000.0-20220615	
Sample Date:			6/15/2022		6/15/2022		6/15/2022		6/15/2022	
Sample Type:			Normal		Normal		Normal		Normal	
Acronym	SW SL[(1)]	Units	Results		Results		Results		Results	
PFBA	N/A	ng/L	60.1		35.1		36.2		24.1	
PFPeA	N/A	ng/L	125		50.8		28.6		16.4	
PFHxA	N/A	ng/L	147		43		24.8		12.1	
PFHpA	N/A	ng/L	43.6		40.1		26.9		13.6	
PFOA	500	ng/L	48.2		15.9		13.3		7.9	J
PFNA	N/A	ng/L	5.1	J	2.6	J	4	U	4	U
PFDA	N/A	ng/L	2.2	J	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U
PFBS	N/A	ng/L	68.9		12.8		8.7		4.5	J
PFPeS	N/A	ng/L	84		17.4		11.8		5.6	J
PFHxS	N/A	ng/L	556		176		93.7		39.2	
PFHpS	N/A	ng/L	30.6		8		4.7	J	2.9	J
PFOS	10	ng/L	**824**		**317**		**211**		**76.7**	
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	8	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	47.1		12.2	J	9.7	J	5.8	J
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U
GenX	N/A	ng/L	16	U	8	U	8	U	8	U

Notes:
(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).
ng/L = nanograms per liter
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
SW SL = Surface Water Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table 4-6
SWMU 014
Surface Water Summary Statistics

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	SW SL (1)	Number of Detections Exceeding SW SL	Number of Detection Limits Exceeding SW
Carboxylates	PFBA	13	13	13.7	74.5	S014-SW0007	N/A		
	PFPeA	13	13	16.4	176	S014-SW0007	N/A		
	PFHxA	13	13	12.1	210	S014-SW0007	N/A		
	PFHxA	13	13	11.5	90.8	S014-SW0007	N/A		
	PFOA	13	13	7.9	81.5	S014-SW0007	500	0	0
	PFNA	13	10	2	10	S014-SW0007	N/A		
	PFDA	13	1	2.2	2.2	S014-SW0008	N/A		
	PFUnA	13	0	No Detections	No Detections	No Detections	N/A		
	PFDoA	13	0	No Detections	No Detections	No Detections	N/A		
	PFTriA	13	0	No Detections	No Detections	No Detections	N/A		
	PFTeA	13	0	No Detections	No Detections	No Detections	N/A		
Sulfonates	PFBS	13	13	4.5	127	S014-SW0007	N/A		
	PFPeS	13	13	5.6	167	S014-SW0007	N/A		
	PFHxS	13	13	39.2	1130	S014-SW0007	N/A		
	PFHpS	13	13	2.9	62.5	S014-SW0007	N/A		
	PFOS	13	13	76.7	1710	S014-SW0003	10	13	0
	PFNS	13	0	No Detections	No Detections	No Detections	N/A		
	PFDS	13	0	No Detections	No Detections	No Detections	N/A		
Precursors / Fluorotelomers	PFOSA	13	4	2.1	7.3	S014-SW0003	N/A		
	NMeFOSAA	13	0	No Detections	No Detections	No Detections	N/A		
	NEtFOSAA	13	0	No Detections	No Detections	No Detections	N/A		
	4:2 FTS	13	0	No Detections	No Detections	No Detections	N/A		
	6:2 FTS	13	5	4.4	47.1	S014-SW0008	N/A		
	8:2 FTS	13	0	No Detections	No Detections	No Detections	N/A		
	GenX	13	0	No Detections	No Detections	No Detections	N/A		

Notes:

(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).

SW SL = Surface Water Screening Level

N/A = not established

ng/L = nanograms per liter

Table 4-7
SWMU 118
Surface Water Analytical Results

Sample Location:			S118-SW0001		S118-SW0002		S118-SW0002		S118-SW0003		S118-SW0004		S118-SW0005		S118-SW0005		S118-SW0005		S118-SW0005	
Sample ID:			S118-SW0001-000.0-20220222		S118-SW0002-000.0-20220222		S118-FD-20220222-01		S118-SW0003-000.0-20220222		S118-SW0004-000.0-20220222		S118-SW0005-000.0-20220516		S118-SW0005-000.0-20220605		S118-SW0005-000.0-20220617		S118-FD-20220617-01	
Sample Date:			2/22/2022		2/22/2022		2/22/2022		2/22/2022		2/22/2022		5/16/2022		6/5/2022		6/17/2022		6/17/2022	
Sample Type:			Normal		Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Duplicate	
Acronym	SW SL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	48.9		9.7	J	9.6	J	9.6	J	5.5	J	9.2	J	13	J	15.2	J	17.1	
PFPeA	N/A	ng/L	162		10.9		9.2		8.5		4	U	3.1	J	6.4	J	6.4	J	6.4	J
PFHxA	N/A	ng/L	87.3		14.1		13.9		12.6		4	U	12.4		15.1		16.3		16.7	
PFHpA	N/A	ng/L	70.2		5.1	J	4.6	J	4.2	J	4	U	3	J	3.2	J	3.2	J	4	J
PFOA	500	ng/L	36.2		8.2		7.5	J	7	J	4	U	4.5	J	4.3	J	3.7	J	3.9	J
PFNA	N/A	ng/L	9.7		3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFDA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFBS	N/A	ng/L	2.2	J	7.1	J	7.1	J	6	J	4	U	4.6	J	5.6	J	5.5	J	5.8	J
PFPeS	N/A	ng/L	2.9	J	9		9.1		7.9		4	U	5.8	J	7.3	J	7.6	J	7.5	J
PFHxS	N/A	ng/L	17.2		96.4		91.5		78.3		4	U	60.8		66.3		71.7		76	
PFHpS	N/A	ng/L	3.8	U	6.4	J	7.4	J	5.7	J	4	U	2.8	J	2.9	J	3.1	J	3.8	J
PFOS	10	ng/L	**18.5**		**483**		**468**		**293**		5.7	J	**158**		**143**		**162**		**172**	
PFNS	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	3.8	U	3.8	U	3.8	U	3.8	U	4	U	4	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U
GenX	N/A	ng/L	7.7	U	7.7	U	7.7	U	7.7	U	8	U	8	U	8	U	8	U	8	U

Notes:
(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).
ng/L = nanograms per liter
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
SW SL = Surface Water Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.

SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table 4-7
SWMU 118
Surface Water Analytical Results

Sample Location:			S118-SW0005		S118-SW0006		S118-SW0006		S118-SW0006		S118-SW0006		S118-SW0006		S118-SW0007		S118-SW0007		S118-SW0007	
Sample ID:			S118-SW0005-000.0-20220623		S118-SW0006-000.0-20220516		S118-SW0006-000.0-20220605		S118-SW0006-000.0-20220617		S118-SW0006-000.0-20220623		S118-FD-20220623-01		S118-SW0007-000.0-20220516		S118-FD-20220516-01		S118-SW0007-000.0-20220605	
Sample Date:			6/23/2022		5/16/2022		6/5/2022		6/17/2022		6/23/2022		6/23/2022		5/16/2022		5/16/2022		6/5/2022	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Duplicate		Normal	
Acronym	SW SL [(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	14.5	J	11.9	J	11.8	J	21.4		16.7		21.9		10.9	J	12.9	J	20	
PFPeA	N/A	ng/L	4.2	U	5.7	J	9.6		15.1		12.3		13.3		12.2		12.3		16.5	
PFHxA	N/A	ng/L	17.3		20.1		20.8		39.3		41.4		44.2		26.9		27.7		44.2	
PFHpA	N/A	ng/L	3.7	J	5	J	5.2	J	6.8	J	7.5	J	7.7	J	5.5	J	5.9	J	8.1	
PFOA	500	ng/L	3.6	J	6.3	J	5.6	J	10.4		10		11.1		11		11.3		12.1	
PFNA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFDA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFBS	N/A	ng/L	5.5	J	6.7	J	7.7	J	12.7		13.1		13.5		10.1		10.2		16.5	
PFPeS	N/A	ng/L	7	J	9.6		9.4		16.5		16.6		17.5		14		14.5		21.5	
PFHxS	N/A	ng/L	75		106		105		176		174		182		149		143		204	
PFHpS	N/A	ng/L	4.2	U	5.8	J	5.4	J	10.3		10.6		9.5		8.6		8.3		11	
PFOS	10	ng/L	**165**		**242**		**237**		**442**		**541**		**562**		**470**		**476**		**451**	
PFNS	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	4.2	U	4	U	4.2	U	4	U	4	U	4.2	U	4	U	20	U	4	U
NMeFOSAA	N/A	ng/L	8.3	U	8	U	8.3	U	8	U	8	U	8.3	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8.3	U	8	U	8.3	U	8	U	8	U	8.3	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8.3	U	8	U	8.3	U	8	U	8	U	8.3	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8.3	U	8	U	8.3	U	8	U	8	U	8.3	U	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	8.3	U	8	U	8.3	U	8	U	8	U	8.3	U	8	U	8	U	8	U
GenX	N/A	ng/L	42	U	8	U	8.3	U	8	U	40	U	42	U	8	U	8	U	8	U

Notes:
(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).
ng/L = nanograms per liter
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
SW SL = Surface Water Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table 4-7
SWMU 118
Surface Water Analytical Results

Sample Location:			S118-SW0007		S118-SW0007		S118-SW0008		S118-SW0008	
Sample ID:			S118-SW0007-000.0-20220617		S118-SW0007-000.0-20220623		S118-SW0008-000.0-20220616		S118-FD-20220616-01	
Sample Date:			6/17/2022		6/23/2022		6/16/2022		6/16/2022	
Sample Type:			Normal		Normal		Normal		Duplicate	
Acronym	SW SL [1]	Units	Results		Results		Results		Results	
PFBA	N/A	ng/L	21.1		13.3	J	11.8	J	11.2	J
PFPeA	N/A	ng/L	8.2		7.6	J	12.5		7.9	J
PFHxA	N/A	ng/L	25		19.3		17.2		15.2	
PFHpA	N/A	ng/L	4.1	J	3.7	J	5.3	J	4.3	J
PFOA	500	ng/L	7.7	J	6.9	J	5.2	J	5	J
PFNA	N/A	ng/L	4	U	4	U	4	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U
PFBS	N/A	ng/L	9.2		6.3	J	6.8	J	6.5	J
PFPeS	N/A	ng/L	11.7		9.3		7.3	J	9.1	
PFHxS	N/A	ng/L	141		107		100		89.5	
PFHpS	N/A	ng/L	12.8		9.7		7.9	J	7	J
PFOS	10	ng/L	**542**		**708**		**633**		**613**	
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	4	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U
GenX	N/A	ng/L	8	U	8	U	8	U	8	U

Notes:
(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).
ng/L = nanograms per liter
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
SW SL = Surface Water Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table 4-8
SWMU 118
Surface Water Summary Statistics

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	SW SL [(1)]	Number of Detections Exceeding SW SL	Number of Detection Limits Exceeding SW SL
Carboxylates	PFBA	22	22	5.5	48.9	S118-SW0001	N/A		
	PFPeA	22	20	3.1	162	S118-SW0001	N/A		
	PFHxA	22	21	12.4	87.3	S118-SW0001	N/A		
	PFHpA	22	21	3	70.2	S118-SW0001	N/A		
	PFOA	22	21	3.6	36.2	S118-SW0001	500	0	0
	PFNA	22	1	9.7	9.7	S118-SW0001	N/A		
	PFDA	22	0	No Detections	No Detections	No Detections	N/A		
	PFUnA	22	0	No Detections	No Detections	No Detections	N/A		
	PFDoA	22	0	No Detections	No Detections	No Detections	N/A		
	PFTriA	22	0	No Detections	No Detections	No Detections	N/A		
	PFTeA	22	0	No Detections	No Detections	No Detections	N/A		
Sulfonates	PFBS	22	21	2.2	16.5	S118-SW0007	N/A		
	PFPeS	22	21	2.9	21.5	S118-SW0007	N/A		
	PFHxS	22	21	17.2	204	S118-SW0007	N/A		
	PFHpS	22	19	2.8	12.8	S118-SW0007	N/A		
	PFOS	22	22	5.7	708	S118-SW0007	10	21	0
	PFNS	22	0	No Detections	No Detections	No Detections	N/A		
	PFDS	22	0	No Detections	No Detections	No Detections	N/A		
Precursors / Fluorotelomers	PFOSA	22	0	No Detections	No Detections	No Detections	N/A		
	NMeFOSAA	22	0	No Detections	No Detections	No Detections	N/A		
	NEtFOSAA	22	0	No Detections	No Detections	No Detections	N/A		
	4:2 FTS	22	0	No Detections	No Detections	No Detections	N/A		
	6:2 FTS	22	0	No Detections	No Detections	No Detections	N/A		
	8:2 FTS	22	0	No Detections	No Detections	No Detections	N/A		
	GenX	22	0	No Detections	No Detections	No Detections	N/A		

Notes:

(1) Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment (Florida Department of Environmental Protection, 2020).

SW SL = Surface Water Screening Level

N/A = not established

ng/L = nanograms per liter

Table 4-9
SWMU 014
Equipment and Field Blank Analytical Results

Sample ID:			S014-EB-20220222-01	S014-FB-20220222-01	S014-EB-20220225-01	S014-FB-20220225-01	S014-EB-20220228-01	S014-FB-20220228-01	S014-EB-20220301-01	S014-FB-20220301-01
Sample Date:			2/22/2022	2/22/2022	2/25/2022	2/25/2022	2/28/2022	2/28/2022	3/1/2022	3/1/2022
Sample Type:			Equipment Blank	Field Blank - Water	Equipment Blank	Field Blank - Water	Equipment Blank	Field Blank - Water	Equipment Blank	Field Blank - Water
Acronym	RSL [(1)]	Units	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
PFPeA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFHxA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFHpA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFOA	6	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFNA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFDA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFUnA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFDoA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFTriA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFTeA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFBS	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFPeS	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFHxS	40	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFHpS	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFOS	4	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFNS	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFDS	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
PFOSA	N/A	ng/L	4 U	4 U	3.8 U	3.8 U	4 U	4 U	4 U	4 U
NMeFOSAA	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
NEtFOSAA	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
4:2 FTS	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
6:2 FTS	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
8:2 FTS	N/A	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U
GenX	6	ng/L	8 U	8 U	7.7 U	7.7 U	8 U	8 U	8 U	8 U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Sample ID:			S014-EB-20220302-01		S014-FB-20220302-01		S014-EB-20220303-01		S014-FB-20220303-01		S014-EB-20220304-01		S014-FB-20220304-01		S014-EB-20220615-01		S014-FB-20220615-01		S014-EB-20220617-01	
Sample Date:			3/2/2022		3/2/2022		3/3/2022		3/3/2022		3/4/2022		3/4/2022		6/15/2022		6/15/2022		6/17/2022	
Sample Type:			Equipment Blank		Field Blank - Water		Equipment Blank		Field Blank - Water		Equipment Blank		Field Blank - Water		Equipment Blank		Field Blank - Water		Equipment Blank	
Acronym	RSL [(1)]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
PFPeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFHxA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFHpA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFOA	6	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFNA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFBS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFPeS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFHxS	40	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFHpS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFOS	4	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFNS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
PFOSA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	4	U	4.2	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U
GenX	6	ng/L	8	U	8	U	8	U	8	U	8	U	8	U	8.3	U	8	U	8	U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
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UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Sample ID:			S014-FB-20220617-01		S014-EB-20220622-01		S014-FB-20220622-01	
Sample Date:			6/17/2022		6/22/2022		6/22/2022	
Sample Type:			Field Blank - Water		Equipment Blank		Field Blank - Water	
Acronym	RSL [(1)]	Units	Results		Results		Results	
PFBA	N/A	ng/L	8	U	8.7	U	8	U
PFPeA	N/A	ng/L	4	U	4.3	U	4	U
PFHxA	N/A	ng/L	4	U	4.3	U	4	U
PFHpA	N/A	ng/L	4	U	4.3	U	4	U
PFOA	6	ng/L	4	U	4.3	U	4	U
PFNA	N/A	ng/L	4	U	4.3	U	4	U
PFDA	N/A	ng/L	4	U	4.3	U	4	U
PFUnA	N/A	ng/L	4	U	4.3	U	4	U
PFDoA	N/A	ng/L	4	U	4.3	U	4	U
PFTriA	N/A	ng/L	4	U	4.3	U	4	U
PFTeA	N/A	ng/L	4	U	4.3	U	4	U
PFBS	N/A	ng/L	4	U	4.3	U	4	U
PFPeS	N/A	ng/L	4	U	4.3	U	4	U
PFHxS	40	ng/L	4	U	4.3	U	4	U
PFHpS	N/A	ng/L	4	U	4.3	U	4	U
PFOS	4	ng/L	4	U	4.3	U	4	U
PFNS	N/A	ng/L	4	U	4.3	U	4	U
PFDS	N/A	ng/L	4	U	4.3	U	4	U
PFOSA	N/A	ng/L	4	U	4.3	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8.7	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8.7	U	8	U
4:2 FTS	N/A	ng/L	8	U	8.7	U	8	U
6:2 FTS	N/A	ng/L	8	U	8.7	U	8	U
8:2 FTS	N/A	ng/L	8	U	8.7	U	8	U
GenX	6	ng/L	8	U	8.7	U	8	U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Table 4-10
SWMU 118
Equipment Blank and Field Blank Analytical Results

Sample ID:			S118-EB-20220222-01	S118-FB-20220222-01	S118-EB-20220223-01	S118-FB-20220223-01	S118-EB-20220224-01	S118-FB-20220224-01	S118-EB-20220303-01	S118-FB-20220303-01	S118-EB-20220304-01
Sample Date:			2/22/2022	2/22/2022	2/23/2022	2/23/2022	2/24/2022	2/24/2022	3/3/2022	3/3/2022	3/4/2022
Sample Type:			Equpment Blank	Field Blank - Water	Equpment Blank	Field Blank - Water	Equpment Blank	Field Blank - Water	Equpment Blank	Field Blank - Water	Equpment Blank
Acronym	RSL [1]	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
PFPeA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFHxA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFHpA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOA	6	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFNA	6	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFUnA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDoA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTriA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFTeA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFBS	600	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFPeS	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFHxS	40	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFHpS	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOS	4	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFNS	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFDS	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
PFOSA	N/A	ng/L	3.8 U	3.8 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
NMeFOSAA	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
NEtFOSAA	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
4:2 FTS	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
6:2 FTS	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
8:2 FTS	N/A	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
GenX	6	ng/L	7.7 U	7.7 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Table 4-10
SWMU 118
Equipment Blank and Field Blank Analytical Results

Sample ID:			S118-FB-20220304-01	S118-EB-20220516-01	S118-EB-20220516-01	S118-FB-20220516-01	S118-FB-20220516-01	S118-EB-20220605-01	S118-EB-20220605-01	S118-FB-20220605-01	S118-FB-20220605-01
Sample Date:			3/4/2022	5/16/2022	5/16/2022	5/16/2022	5/16/2022	6/5/2022	6/5/2022	6/5/2022	6/5/2022
Sample Type:			Field Blank - Water	Equpment Blank	Equpment Blank	Field Blank - Water	Field Blank - Water	Equpment Blank	Equpment Blank	Field Blank - Water	Field Blank - Water
Acronym	RSL [1]	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results
PFBA	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
PFPeA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFHxA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFHpA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFOA	6	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFNA	6	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFDA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFUnA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFDoA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFTriA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFTeA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFBS	600	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFPeS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFHxS	40	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFHpS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFOS	4	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFNS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFDS	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
PFOSA	N/A	ng/L	4 U	4 U	4 U	4 U	4 U	4.2 U	4.2 U	4 U	4 U
NMeFOSAA	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
NEtFOSAA	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
4:2 FTS	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
6:2 FTS	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
8:2 FTS	N/A	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U
GenX	6	ng/L	8 U	8 U	8 U	8 U	8 U	8.3 U	8.3 U	8 U	8 U

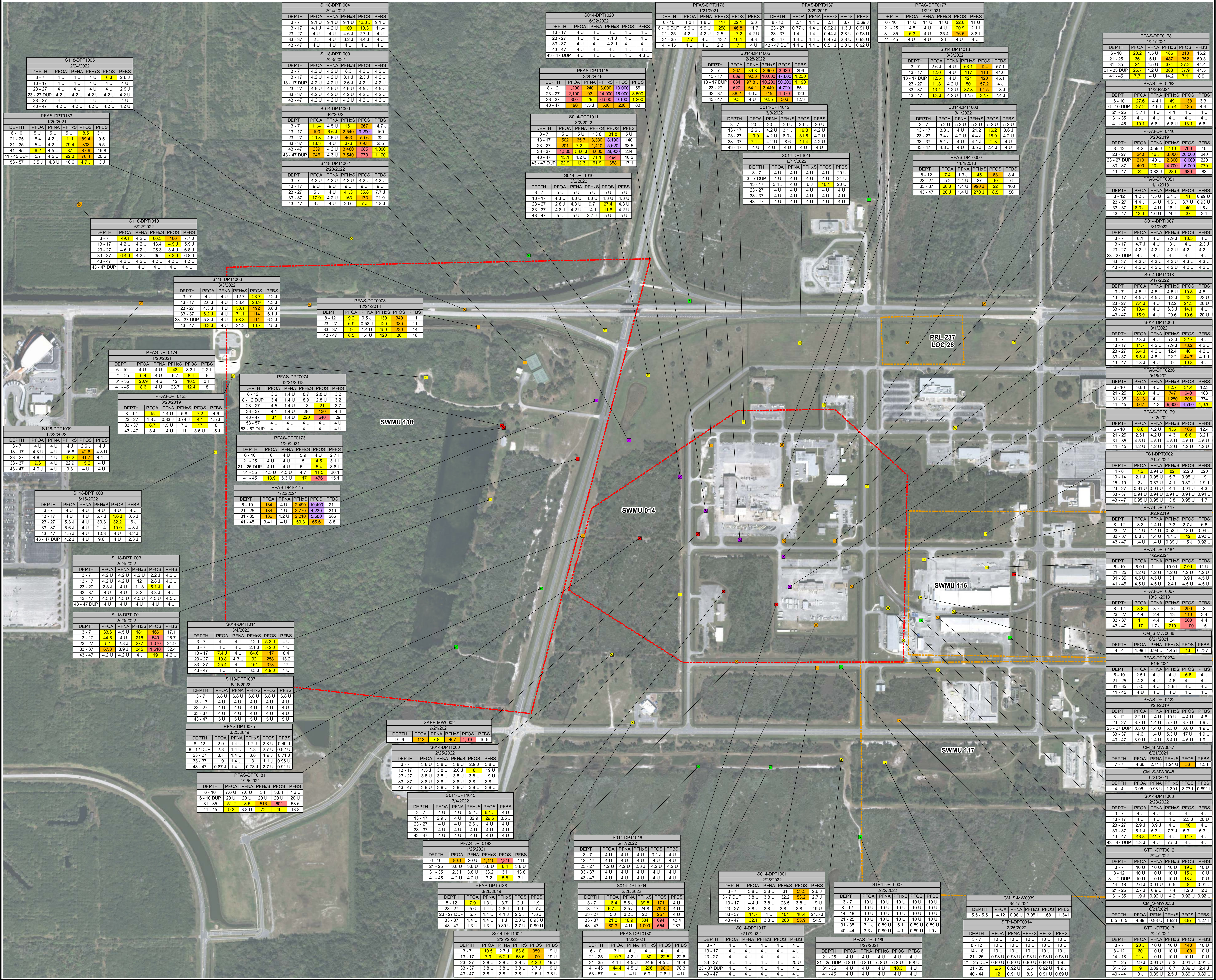
Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
RSL = Regional Screening Level
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Table 4-10
SWMU 118
Equipment Blank and Field Blank Analytical Results

Sample ID:			S118-EB-20220616-01		S118-FB-20220616-01		S118-EB-20220617-01		S118-FB-20220617-01		S118-EB-20220622-01		S118-FB-20220622-01		S118-EB-20220623-01		S118-FB-20220623-01	
Sample Date:			6/16/2022		6/16/2022		6/17/2022		6/17/2022		6/22/2022		6/22/2022		6/23/2022		6/23/2022	
Sample Type:			Equpment Blank		Field Blank - Water		Equpment Blank		Field Blank - Water		Equpment Blank		Field Blank - Water		EB		FB	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
PFPeA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFHxA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFHpA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFOA	6	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFNA	6	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFBS	600	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFPeS	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFHxS	40	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFHpS	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFOS	4	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFNS	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFDS	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
PFOSA	N/A	ng/L	4	U	4	U	4.2	U	4	U	4	U	4	U	4	U	4	U
NMeFOSAA	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
4:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
6:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
8:2 FTS	N/A	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U
GenX	6	ng/L	8	U	8	U	8.3	U	8	U	8	U	8	U	8	U	8	U

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
N/A = not established
ng/L = nanograms per liter
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Figure 4-1
SWMU 014 and SWMU 118 Base Support Building and KARS Park II Groundwater Analytical Results



S118-DPT1005 — 2/24/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	6 J	2.6 J
13 - 17	4 U	4 U	4 U	4 U	4 U
23 - 27	4 U	4 U	4 U	4 U	2.9 J
23 - 27 DUP	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
33 - 37	4 U	4 U	4 U	4 U	4 U
43 - 47	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U

PFAS-DPT0183 — 1/26/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	5 U	5 U	5 U	8.5	3.1 I
21 - 25	5.4	4.2 U	111	89.4	9.5
31 - 35	5.4	4.2 U	79.4	308	5.5
41 - 45	6.2	4.5 U	87	87.9	19.8
41 - 45 DUP	5.7	4.5 U	92.3	78.4	20.6
53 - 57	3.5 J	4.3 U	10.6	4.7 J	3 J

S118-DPT1010 — 6/22/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	49.1	4.2 U	66.3	166	7.7 J
13 - 17	4.2 U	4.2 U	13.4	4.9 J	5.9 J
23 - 27	4.6 J	4.2 U	25.3	3.4 J	6.8 J
33 - 37	6.4 J	4.2 U	35	7.2 J	6.8 J
43 - 47	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
43 - 47 DUP	4 U	4 U	4 U	4 U	4 U

S118-DPT1006 — 3/3/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	12.7	23.7	2.2 J
13 - 17	2.6 J	4 U	38.4	23.9	4.3 J
23 - 27	4.3 J	4 U	53.1	192	3.8 J
33 - 37	6.2 J	4 U	71.1	114	6.1 J
33 - 37 DUP	5.8 J	4 U	68.3	111	6.2 J
43 - 47	6.3 J	4 U	21.3	10.7	2.5 J

PFAS-DPT0073 — 12/21/2018

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	9.2	0.5 J	130	340	11
23 - 27	6.9	0.52 J	120	330	11
33 - 37	9	1.4 U	150	230	14
43 - 47	8.5	1.4 U	120	36	18

PFAS-DPT0174 — 1/20/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	4 U	4 U	48	3.3 I	2.2 I
21 - 25	6.4	4 U	6.7	8.4	5
31 - 35	20.9	4.6	12	10.5	3 I
41 - 45	8.6	4 U	23.7	12.4	8

PFAS-DPT0125 — 3/20/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	15	1.4 U	5.8	7.2	4.6
23 - 27	1.8 J	0.83 J	0.74 J	4.1	1.5 J
33 - 37	6.7	1.5 U	7.6	17	8
43 - 47	3.4	1.4 U	11	3.6 U	1.5 J

PFAS-DPT0074 — 12/21/2018

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	3.6	1.4 U	8.7	2.8 U	3.2
8 - 12 DUP	3.4	1.4 U	8.9	2.8 U	3.2
23 - 27	4.5	1.4 U	18	21	3.7
33 - 37	4.1	1.4 U	28	130	4.4
43 - 47	37	1.4 U	220	540	29
53 - 57	4 U	4 U	4 U	4 U	4 U
53 - 57 DUP	4 U	4 U	4 U	4 U	4 U

S118-DPT1009 — 6/22/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 J	2.6 J	4 J
13 - 17	4.3 U	4 U	16.8	42.6	4.3 U
23 - 27	4.8 J	4 U	47.2	91.7	4.1 J
33 - 37	9.6	4 U	22.9	15.2	4 U
43 - 47	4.9 J	4 U	9.3	4 U	4 U

PFAS-DPT0173 — 1/20/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	6	4 U	5.9	4 U	2.7 I
21 - 25	4 U	4 U	5	4.5	3.1 I
21 - 25 DUP	4 U	4 U	5.1	5.4	3.8 I
31 - 35	4.5 U	4.5 U	4.7	11.5	26.1
41 - 45	18.9	5.3 U	117	476	15.1

S118-DPT1008 — 6/16/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	4 U	4 U
13 - 17	4 U	4 U	5.7 J	4.6 J	3.5 J
23 - 27	5.3 J	4 U	30.3	32.2	6 J
33 - 37	5.6 J	4 U	21.4	10.9	4.8 J
43 - 47	4.5 J	4 U	10.3	4 U	3.2 J
43 - 47 DUP	4.2 J	4 U	9.6	4 U	2.3 J

PFAS-DPT0175 — 1/20/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	134	4 U	2,490	10,400	211
21 - 25	134	4 U	2,770	4,230	310
31 - 35	136	4.2 U	2,210	5,680	286
41 - 45	3.4 I	4 U	59.3	65.6	8.8

S118-DPT1003 — 2/24/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4.2 U	4.2 U	4.2 U	2.2 J	4.2 U
13 - 17	4.2 U	4.2 U	12	2.8 J	4.2 U
23 - 27	2.8 J	4 U	11.3	5.1 J	4 U
33 - 37	4 U	4 U	8.2	3.3 J	4 U
43 - 47	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
43 - 47 DUP	4 U	4 U	4 U	4 U	4 U

S118-DPT1001 — 2/23/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	33.6	4.5 U	181	166	17.1
13 - 17	44.5	4 U	216	540	25.7
23 - 27	52	2.8 J	277	1,070	24.9
33 - 37	67.3	3.9 J	345	1,510	32.4
43 - 47	4.2 U	4.2 U	4 J	19	4.2 U

S014-DPT1014 — 3/4/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	2.2 J	5.3 J	4 U
3 - 7	4 U	4 U	2.1 J	5.2 J	4 U
13 - 17	7.4 J	4 U	64.6	117	8.4
23 - 27	10.8	4.3 U	92	258	13.2
33 - 37	25.4	4 U	161	373	17
43 - 47	4 U	4 U	3.5 J	4.9 J	4 U

S118-DPT1007 — 6/16/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
13 - 17	4 U	4 U	4 U	4 U	4 U
23 - 27	4 U	4 U	4 U	4 U	4 U
33 - 37	4 U	4 U	4 U	4 U	4 U
43 - 47	5 U	5 U	5 U	5 U	5 U

PFAS-DPT0075 — 3/25/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	2.9	1.4 U	1.7 J	2.8 U	0.49 J
8 - 12 DUP	2.8	1.4 U	1.8	2.7 U	0.92 U
23 - 27	3.1	1.4 U	3.8	1.9 J	0.71 J
33 - 37	1.9	1.4 U	3	1.1 J	0.96 U
43 - 47	0.87 J	1.4 U	0.73 J	2.7 U	0.91 U

PFAS-DPT0181 — 1/25/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	7.6 U	7.6 U	5 I	3.8 I	7.6 U
6 - 10 DUP	20 U	20 U	20 U	20 U	20 U
31 - 35	51.2	8.5	516	601	53.6
41 - 45	9.3	3.8 U	72	19	13.8

SAEE-MW0002 — 9/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
9 - 9	112	7.8	467	1,010	16.5

S014-DPT1000 — 2/25/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	3.8 U	3.8 U	3.8 U	2.9 J	3.8 U
13 - 17	4.5 J	3.8 U	2.6 J	8	19 U
23 - 27	3.8 U	3.8 U	3.8 U	3.8 U	19 U
33 - 37	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
43 - 47	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U

S014-DPT1015 — 3/4/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	5.2 J	6.1 J	4 U
13 - 17	2.9 J	4 U	32.9	29.6	3.5 J
23 - 27	4 U	4 U	2.6 J	4 U	4 U
33 - 37	4 U	4 U	4 U	4 U	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U

PFAS-DPT0182 — 1/25/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	80.1	20 U	1,110	2,810	111
21 - 25	3.8 U	3.8 U	3.8 U	6.4	3.8 U
31 - 35	2.3 I	3.8 U	33.2	3 I	13.8
41 - 45	4.2 U	4.2 U	7.2	5.8	3 I

PFAS-DPT0138 — 3/26/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	7.9	1.3 U	3.7	2 J	1.9
23 - 27	5.6	1.4 U	2.8 J	1 J	1.7 J
23 - 27 DUP	5.5	1.4 U	4.1 J	2.5 J	1.6 J
33 - 37	1.4 U	1.4 U	1 J	2.8 U	0.93 U
43 - 47	1.3 U	1.3 U	0.89 U	2.7 U	0.89 U

S014-DPT1002 — 2/25/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	10.5	2.7 J	83.8	359	19 U
13 - 17	7.9	6.2 J	58.6	109	19 U
23 - 27	3.8 U	3.8 U	3.8 U	4.2 J	19 U
33 - 37	3.8 U	3.8 U	3.8 U	3.7 J	19 U
43 - 47	3.8 U	3.8 U	3.8 U	2.5 J	3.8 U

S014-DPT1016 — 6/17/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	3.1 J	4 U
13 - 17	4 U	4 U	4 U	4 U	4 U
23 - 27	4.2 U	4.2 U	2.3 J	4.2 U	4.2 U
33 - 37	4 U	4 U	4 U	4 U	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U

S014-DPT1004 — 2/28/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	16.4	5.6 J	39.8	171	4 U
13 - 17	6.7 J	2.5 J	24.8	79.3	4 U
23 - 27	5 J	3.2 J	22	257	4 U
33 - 37	21.2	18.9	334	694	43.4
43 - 47	80.3	4 U	1,090	554	287

PFAS-DPT0180 — 1/22/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	3 I	4 U	4 U	4 U	4 U
21 - 25	10.7	4.2 U	80	22.5	22.6
31 - 35	4.1 I	4.5 U	24.9	4.5 U	10.4
41 - 45	44.4	4.5 U	296	98.6	78.3
53 - 57	4 U	4 U	6.9 J	2.6 J	4 U

S014-DPT1001 — 2/25/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	3.8 U	3.8 U	31	53.3	2.6 J
3 - 7 DUP	3.8 U	3.8 U	32.2	53.2	2.7 J
13 - 17	4.4 J	3.8 U	23.5	3.8 U	19 U
23 - 27	3.8 U	3.8 U	3.8 U	3.8 U	19 U
33 - 37	14.7	4 U	104	18.4	24.5 J
43 - 47	32.1	3.8 U	263	55.9	54.5

S014-DPT1017 — 6/17/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	4 U	4 U
13 - 17	4 U	4 U	4 U	4 U	4 U
23 - 27	4 U	4 U	4 U	4 U	4 U
33 - 37	4 U	4 U	4 U	4 U	20 U
33 - 37 DUP	4 U	4 U	4 U	4 U	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U

STP1-DPT0007 — 2/22/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	10 U	10 U	10 U	10 U	10 U
8 - 12	10 U	10 U	10 U	10 U	10 U
14 - 18	10 U	10 U	10 U	10 U	10 U
21 - 25	10 U	10 U	10 U	10 U	10 U
31 - 35	3.1 J	0.89 U	6.1	0.89 U	0.89 U
40 - 44	3.3 J	0.89 U	4.1	0.89 U	1.9 J

PFAS-DPT0189 — 1/27/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
21 - 25	4 U	4 U	4 U	4 U	4 U
21 - 25 DUP	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
31 - 35	4 U	4 U	4 U	10.3	4 U
41 - 45	4 U	4 U	4 U	4 U	4 U

CM_S-MW0039 — 6/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
5.5 - 5.5	4.12	0.98 U	3.05 I	1.68 I	1.34 I

STP1-DPT0014 — 2/25/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	10 U	10 U	10 U	10 U	10 U
8 - 12	10 U	10 U	10 U	10 U	10 U
14 - 18	10 U	10 U	10 U	10 U	10 U
21 - 25	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U
21 - 25 DUP	0.89 U	0.89 U	0.89 U	0.89 U	1.9 J
31 - 35	6.5	0.92 U	5.5	0.92 U	1.9 J
40 - 44	12	0.91 U	8.3	0.91 U	0.89 U

S118-DPT1004 — 2/24/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	9.1 U	9.1 U	9.1 U	12.8 J	9.1 U
13 - 17	4.1 J	4.2 U	103	10.3	11.4
23 - 27	4 U	4 U	4.6 J	2.7 J	4 U
33 - 37	2 J	4 U	6.2 J	3.4 J	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U

S118-DPT1000 — 2/23/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4.2 U	4.2 U	8.3	4.2 U	4.2 U
13 - 17	4.2 U	4.2 U	3.1 J	2.3 J	4.2 U
13 - 17 DUP	4.2 U	4.2 U	2.6 J	4.2 U	4.2 U
23 - 27	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
33 - 37	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
43 - 47	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U

S014-DPT1009 — 3/2/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	11.4	4.5 U	151	267	14.7 J
13 - 17	190	6.6 J	2,540	9,290	160
23 - 27	20.8	4.5 U	463	50.6	32
33 - 37	18.3	4 U	376	69.8	255
43 - 47	239	4.2 U	3,480	685	1,090
43 - 47 DUP	246	4.3 U	3,540	770	1,120

S118-DPT1002 — 2/23/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
13 - 17	9 U	9 U	9 U	9 U	9 U
23 - 27	5 J	4 U	41.3	35.8	7.7 J
33 - 37	17.9	4.2 U	163	173	21.9
43 - 47	3 J	4 U	26.6	7 J	4.8 J

S014-DPT1020 — 6/22/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
13 - 17	4 U	4 U	4 U	4 U	4 U
23 - 27	4 U	4 U	7.1 J	4 U	4 U
33 - 37	4 U	4 U	4.3 J	4 U	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U
43 - 47 DUP	4 U	4 U	4 U	4 U	4.3 U

PFAS-DPT0115 — 3/29/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	1,200	240	3,000	13,000	55
23 - 27	2,100	93	14,000	16,000	3,500
33 - 37	850	29	6,500	9,100	1,200
43 - 47	190	1.5 J	500	200	80

S014-DPT1011 — 3/2/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	5 U	5 U	13.8	31.8	5 U
13 - 17	502	65.7	3,330	8,190	140
23 - 27	201	7.2 J	1,410	5,620	98.5
33 - 37	1,500	53.6 J	3,600	28,900	224
43 - 47	15.1	4.2 U	71.1	494	16.2
43 - 47 DUP	22.9	12.3	61.9	358	17.1

S014-DPT1010 — 3/2/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	5 U	5 U	5 U	5 U	5 U
13 - 17	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
23 - 27	2.8 J	4.3 U	9.7	27.4	4.3 U
33 - 37	4.8 J	4.2 U	14.1	11.8	4.2 U
43 - 47	5 U	5 U	3.7 J	5 U	5 U

PFAS-DPT0176 — 1/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	1.3 I	1.8 U	117	22.1	5.3
6 - 10 DUP	5.9 U	5.9 U	258	46.8	11.7
21 - 25	4.2 U	4.2 U	2.5 I	17.2	4.2 U
31 - 35	7.7	4 U	13.7	16.1	8.3
41 - 45	4 U	4 U	2.3 I	7	4 U

S014-DPT1005 — 2/28/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	267	39.8	2,650	3,630	399
13 - 17	889	92.3	10,600	47,800	1,230
13 - 17 DUP	884	97.8 J	10,200	50,200	1,190
23 - 27	627	64.1	3,440	4,720	551
33 - 37	88.2	4.6 J	745	1,070	123
43 - 47	9.5	4 U	92.5	306	12.3

S014-DPT1012 — 3/3/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	20 U	20 U	20 U	20 U	20 U
13 - 17	2.6 J	4.2 U	3.1 J	19.8	4.2 U
23 - 27	9.9	4.2 U	6.3 J	31.5	4.2 U
33 - 37	7.1 J	4.2 U	8.6	11.4	4.2 U
43 - 47	4 U	4 U	4 U	4 U	4 U

S014-DPT1019 — 6/17/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	4 U	20 U
3 - 7 DUP	4 U	4 U	4 U	4 U	24 U
13 - 17	3.4 J	4 U	6 J	10.1	20 U
23 - 27	4 U	4 U	4 U	4 U	4 U
33 - 37	4 U	4 U	4 U	4 U	4 U
43 - 47	4 U	4 U	4 U	4 U	4 U

PFAS-DPT0137 — 3/29/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	2.1	1.4 U	2.1	3.7	0.69 J
23 - 27	0.77 J	1.4 U	0.92 J	1.3 J	0.91 U
33 - 37	1.4 U	1.4 U	0.44 J	2.8 U	0.93 U
43 - 47	1.4 U	1.4 U	0.45 J	2.8 U	0.93 U
43 - 47 DUP	1.4 U	1.4 U	0.51 J	2.8 U	0.92 U

PFAS-DPT0177 — 1/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	11 U	11 U	11 U	22.6	11 U
21 - 25	4.5	4 U	4 U	20.9	2.1 I
31 - 35	6.3	4 U	35.4	76.5	3.8 I
41 - 45	4 U	4 U	2 I	4 U	4 U

S014-DPT1013 — 3/3/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	2.6 J	4 U	63.1	124	57.1
13 - 17	12.6	4 U	117	118	44.6
13 - 17 DUP	12.5	4 U	121	120	45.1
23 - 27	11.8	4.2 U	50	57.2	4 J
33 - 37	13.4	4.2 U	87.8	91.5	4.8 J
43 - 47	6.3 J	4.2 U	12.5	32.7	2.4 J

S014-DPT1008 — 3/1/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
13 - 17	3.8 J	4 U	21.2	16.2	3.6 J
23 - 27	3.4 J	4.2 U	4.4 J	18.9	4.2 U
33 - 37	5.1 J	4 U	4.1 J	21.3	4 U
43 - 47	4.8 J	4 U	3.5 J	2.4 J	4 U

PFAS-DPT0050 — 11/1/2018

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	7.4	1.3 J	45	63	8.4
23 - 27	5.2	1.4 U	37	10	6
33 - 37	60 J	1.4 U	990 J	22	160
43 - 47	20 J	1.4 U	270 J	8.5	56

PFAS-DPT0178 — 1/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	20.2	4.5 U	186	313	16.2
21 - 25	36	5 U	487	352	50.3
31 - 35	24	4.5 U	374	37.2	44.4
31 - 35 DUP	25.7	4.2 U	383	37.9	44.5
41 - 45	7.7	4 U	14.2	7.1	8.9

PFAS-DPT0263 — 11/23/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	27.6	4.4 I	49	138	3.3 I
6 - 10 DUP	27.2	4.6 I	55.4	135	4.4 I
21 - 25	3.7 I	4 U	4.1	4 U	4 U
31 - 35	4 U	4 U	4 U	4 U	4 U
41 - 45	10.1	5.6 U	5.6 U	13.1	5.6 U

PFAS-DPT0116 — 3/20/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	4.2	0.59 J	110	760	10
23 - 27	240	16 J	3,000	20,000	240
23 - 27 DUP	210	140 U	2,800	18,000	220
33 - 37	490	10 J	4,700	15,000	770
43 - 47	22	0.83 J	280	980	83

PFAS-DPT0051 — 11/1/2018

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	1.2 J	1.5 U	2.1 J	11	0.99 U
23 - 27	1.4 J	1.4 U	1.6 J	3.7 U	0.93 U
33 - 37	8.3 J	1.4 U	16 J	40	1.5 J
43 - 47	12 J	1.6 U	24 J	37	3.1

S014-DPT1007 — 3/1/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	8.1	4 U	7.9 J	18.5	4 U
13 - 17	4.7 J	4 U	3 J	4 U	2.3 J
23 - 27	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
23 - 27 DUP	4 U	4 U	4 U	4 U	4 U
33 - 37	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
43 - 47	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U

S014-DPT1018 — 6/17/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4.5 U	4.5 U	4.5 U	10.8	4.5 U
13 - 17	4.5 U	4.5 U	6.2 J	13	23 U
23 - 27	7.4 J	4 U	12.2	24.3	20 U
33 - 37	18.4	4 U	6.3 J	14.1	4 U
43 - 47	15.9	4 U	20.6	19.6	20 U

S014-DPT1006 — 3/1/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	2.3 J	4 U	5.3 J	22.7	4 U
13 - 17	14.7	4.2 U	7.9 J	73.2	4.2 U
23 - 27	6.4 J	4.2 U	12.4	40	4.2 U
33 - 37	6.5 J	4.8 U	22.2	44.7	4.1 J
43 - 47	4.8 J	4 U	9	19.8	4 U

PFAS-DPT0236 — 9/16/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	3.8 I	4 U	82.7	34.4	12.3
21 - 25	30.8	4 U	747	640	188
31 - 35	81.3	4 U	1,250	206	374
41 - 45	567	4.3	9,300	4,760	1,970

PFAS-DPT0179 — 1/22/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	8.6	4.2 U	135	105	12.4
21 - 25	2.5 I	4.2 U	4.3	6.6	3.2 I
31 - 35	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
41 - 45	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U

FS1-DPT0002 — 2/14/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
4 - 8	7.2	0.94 U	82	2.2 J	220
10 - 14	2.1 J	0.95 U	5.7	0.95 U	19
15 - 19	2 J	0.87 U	4.1	0.87 U	1.9 J
23 - 27	0.91 U	0.91 U	4.1	0.91 U	4.3
33 - 37	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
43 - 47	0.95 U	0.95 U	3.8	0.95 U	1.7

PFAS-DPT0117 — 3/20/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	3.3	1.4 U	7.3	2.7 J	6.6
23 - 27	1.4 U	1.4 U	0.53 J	2.8 U	0.94 U
33 - 37	0.8 J	1.4 U	1.4 J	12	0.92 U
43 - 47	1.4 U	1.4 U	0.39 J	1.5 J	0.92 U

PFAS-DPT0184 — 1/26/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	5.9 I	11 U	10.9 I	7.9 I	11 U
21 - 25	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
31 - 35	4.5 U	4.5 U	3 I	3.9 I	4.5 U
41 - 45	4.5 U	4.5 U	2.4 I	4.5 U	4.5 U

PFAS-DPT0067 — 10/31/2018

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	8.8	3.7	16	290	3
23 - 27	4.4	2.4	13	110	3.4
33 - 37	11	4.4	24	500	4.4
43 - 47	17	1.7 J	210	1,100	15

CM_S-MW0036 — 6/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
4 - 4	1.98 I	0.98 U	1.45 I	13	0.737 I

PFAS-DPT0234 — 9/16/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6 - 10	2.5 I	4 U	4 U	6.8	4 U
21 - 25	4.3	4 U	4.6	4 U	4 U
31 - 35	5.5	4 U	3.8 I	4 U	4 U
41 - 45	4 U	4 U	4 U	4 U	4 U

PFAS-DPT0122 — 3/28/2019

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
8 - 12	2.2 U	1.4 U	10 U	4.4 U	4.8
23 - 27	3.7 U	1.4 U	5.7 U	3.7 U	1.9 U
23 - 27 DUP	3.5 U	1.4 U	5.3 U	3.8 U	1.9 U
33 - 37	4.6	1.4 U	5.3 U	17 U	1.9 U
43 - 47	3.9 U	1.4 U	5.4 U	4.5 U	1.9 U

CM_S-MW0037 — 6/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
7 - 7	4.66	2.71 I	1.24 U	56	1.3 I

CM_S-MW0048 — 6/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
4 - 4	3.06 I	0.98 U	1.39 I	3.77 I	0.891 I

S014-DPT1003 — 2/28/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	4 U	4 U	4 U	4 U	4 U
13 - 17	4 U	4 U	4 U	2.5 J	20 U
23 - 27	2.9 J	3.9 J	4 U	10	4 U
33 - 37	5.1 J	5.3 U	7.7 J	5.3 U	5.3 U
43 - 47	43.8	41.7	4 U	14.7	4 U
43 - 47 DUP	4.3 J	4 U	7.5 J	4 U	4 U

STP1-DPT0012 — 2/24/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	10 U	10 U	10 U	19 J	10 U
8 - 12	10 U	10 U	10 U	15 J	10 U
8 - 12 DUP	10 U	10 U	10 U	18 J	10 U
14 - 18	2.6 J	0.91 U	6.5	8	0.91 U
21 - 25	2.7 J	0.9 U	7.4	1.2 J	2 J
31 - 35	1.9 J	0.92 U	4.2	0.92 U	0.92 U

CM_S-MW0038 — 6/21/2021

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
6.5 - 6.5	4.89	0.98 U	1.92 I	8.97	1.27 I

STP1-DPT0013 — 2/24/2022

DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS
3 - 7	20 J	10 U	10 U	140	10 U
8 - 12	60	10 U	10 U	100	10 U
14 - 18	21 J	10 U	10 U	10 U	10 U
21 - 25	2.9 J	0.91 U	5.3	0.91 U	0.91 U
31 - 35	9	0.89 U	8.7	0.89 U	2.4 J
40 - 44	3 J	0.89 U	2.5 J	0.89 U	0.89 U

Legend

- DPT Sample < RSLs
- DPT Sample > RSLs
- DPT Sample > 10 x RSLs
- DPT Sample > 100 x RSLs
- DPT Sample > 1000 x RSLs
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries

Notes:
Yellow=concentration greater than RSL
Orange=concentration greater than 10 x RSL
Red=concentration greater than 100 x RSL
Purple=concentration greater than 1000 x RSL
Results in nanograms per liter (ng/L)

I=estimated value
J=estimated value
LOC=location of concern
PFOA=perfluorooctanoic acid
PFNA=perfluorononanoic acid
PFHxS=perfluorohexanesulfonic acid
PFOS=perfluorooctanesulfonic acid
PFBS=perfluorobutanesulfonic acid
PRL=potential release location
RSL=regional screening level
SWMU=solid waste management unit
U=not detected

SAMPLE LOCATION					
SAMPLE DATE					
DEPTH	PFOA	PFNA	PFHxS	PFOS	PFBS

RSLs				
PFOA	PFNA	PFHxS	PFOS	PFBS
6	6	39	4	601

N

0 200 400 800
Feet

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Source: HGL,
ArcGIS Online Imagery

HGL HydroGeoLogic, Inc

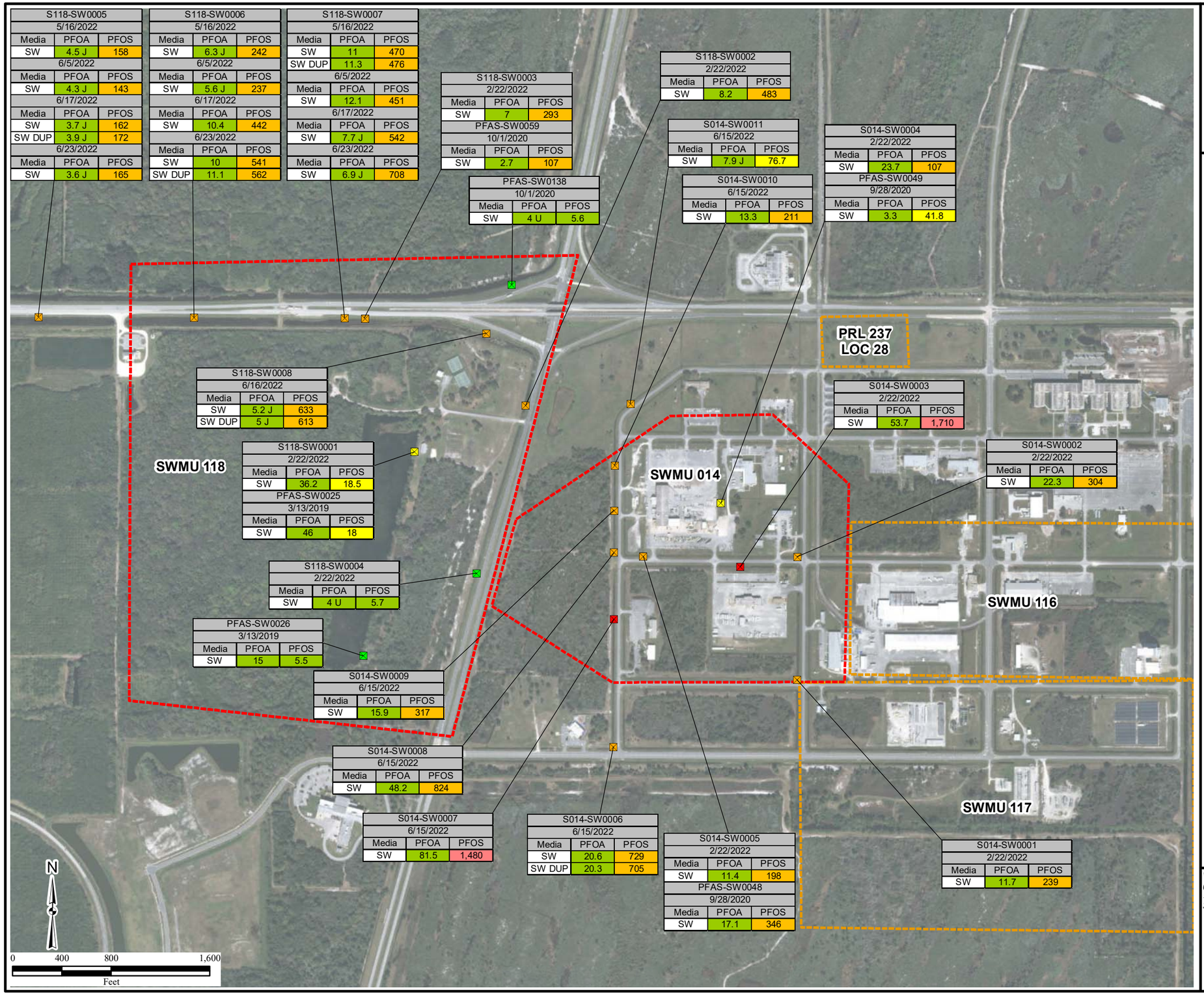


Figure 4-2
SWMU 014 and SWMU 118
Base Support Building and
KARS Park II
Surface Water Analytical Results

Legend

- PFOS < 10 ng/L, PFOA < 500 ng/L
- PFOS >10 ng/L
- PFOS > 100 ng/L
- PFOS > 1,000 ng/L
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries

Notes:
Green=PFOS < 10 ng/L, PFOA < 500 ng/L
Yellow=PFOS >10 ng/L
Orange=PFOS > 100 ng/L
Red=PFOS > 1,000 ng/L
Results in nanograms per liter (ng/L)

J=estimated value
LOC=location of concern
PFOS=perfluorooctanesulfonic acid
PFOA=perfluorooctanoic acid
PRL=potential release location
SWMU=solid waste management unit
SW SL=surface water screening level

Sample Location		
Sample Date		
Media	PFOA Concentration	PFOS Concentration

Surface Water Screening Level	
PFOA	500 ng/L
PFOS	10 ng/L

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Source: HGL, ArcGIS Online Imagery

5. Conclusions and Recommendations

5.1 Conclusions

PFAS site assessment activities were conducted between February 2022 and June 2022 and included the completion of 36 DPT borings with samples taken from five depth intervals and the collection of SW samples from 19 locations for PFAS laboratory analysis for 25 compounds using USEPA Modified Method 537. The objectives of the PFAS site assessment were to (1) delineate PFAS in groundwater exceeding the RSLs and in SW exceeding the SW SLs, and (2) better understand the interaction between groundwater and SW at SWMU 014 and SWMU 118. This data will be used to support further site assessment activities to improve the understanding of the stated objectives.

Groundwater results were compared to the most recent RSLs published by USEPA for residential tap water (USEPA, 2022a) to evaluate the extent of PFAS contamination at SWMU 014 and SWMU 118 for six PFAS analytes (PFOA, PFNA, PFBS, PFHxS, PFOS, and GenX). SW results were compared to the FDEP SW SLs (FDEP, 2020) for PFOA and PFOS.

PFAS in groundwater exceeding RSLs from SWMU 014 extend north to approximately NASA Parkway, east to approximately C Avenue (where PFAS impacts comingle with PFAS impacts from neighboring SWMUs 116 and 117), south to approximately 5th Street SE, and west where PFAS impacts comingle with the reported AFFF release at SWMU 118 and along NASA Parkway to at least the visitor center (**Figure 4-1**). The extent of PFAS impacts is approximated to the northeast, south, and east where samples below the RSLs do not fully bound the groundwater plume. The PFAS contamination boundary between SWMU 014 and SWMUs 116 and 117 is not defined by groundwater samples below the RSLs. The plumes are comingled and will continue to be investigated and refined at a regional scale.

Surface water samples indicated concentrations of PFOS above the SW SL in surface water bodies across the site (**Figure 4-2**). Further assessment and sampling are required to better understand the interaction between groundwater and surface water at SWMU 114.

Groundwater flow from SWMU 014 is primarily to the west toward Indian River with a minor component to the southeast towards an apparent trough in the potentiometric surface before flowing to the south and west. Groundwater flow from SWMU 118 is to the west toward Indian River. The main axis of the PFOS plume exceeding 4,000 ng/L trends to the northwest, closely matching the groundwater potentiometric surface prepared by AECOM (2021). Vertical distributions of PFOS along the plume axis suggests that PFOS from southwest of the Base Support Building at SWMU 014 moves downward before crossing beneath Kennedy Parkway and then moving upward to possibly discharge into the ditch along Kennedy Parkway. Comingling with a suspected source at KARS Park II may also be occurring at the northwest end of the 4,000 ng/L PFOS isocontour. Surface water within the ditches along Kennedy Parkway and NASA Parkway appears to be interacting with the groundwater. PFAS ratios within SW and groundwater are similar along the primary axis of the groundwater plume and within SW along Kennedy Parkway and NASA Parkway.

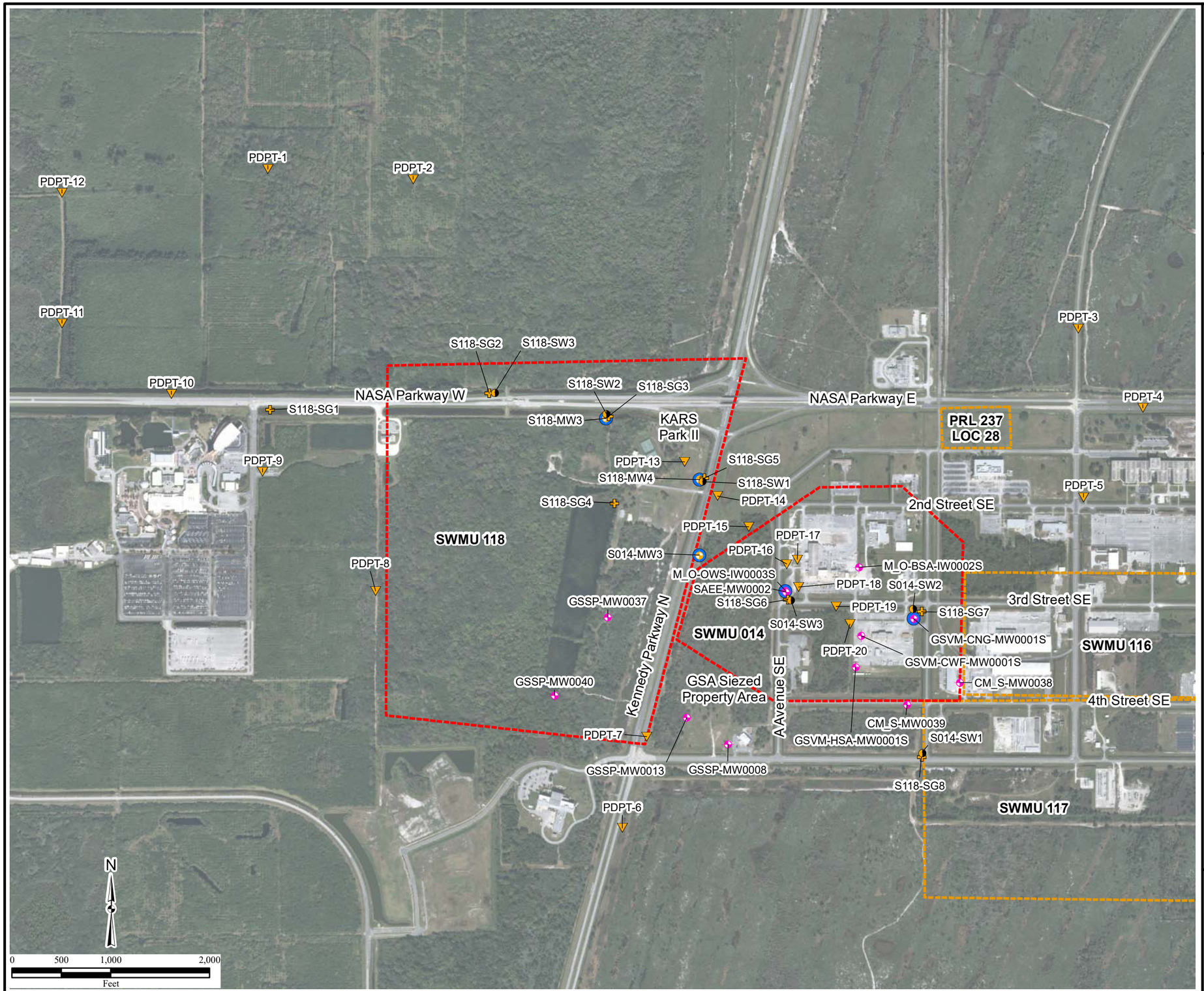
5.2 Recommendations

Additional DPT samples are required to delineate PFAS at SWMU 014 using the USEPA RSLs in groundwater. DPT samples should be located to the northeast, south, and east. To understand potential discharges and any seasonal effects, monitoring well pairs should be installed and sampled quarterly. Monitoring wells should be placed to track the predicted movement of the plume from source areas near the Base Support Building to the north/northwest. Additional monitoring wells should be installed to more accurately determine groundwater flow directions for shallow (water table) groundwater and deeper groundwater near the estuarine clay.

SW samples should be collected quarterly from select locations to pair with nearby groundwater sampling to determine if PFAS discharge to SW can be identified at SWMU 014. Staff gauges should be installed to determine SW flow and flow directions in select ditches around SWMU 014.

Proposed DPT groundwater sample locations to be used to delineate PFAS to the USEPA RSLs are shown in **Figure 5-1**. Proposed quarterly SW and monitoring well sampling locations are shown on **Figure 5-2**. Additional DPT groundwater sample and SW sample locations will be proposed subsequent to the DPT sampling referenced above.

Figure 5-1
SWMU 014 and SWMU 118
Base Support Building and KARS Park II
Proposed Monitoring Wells and DPTSample Locations



Legend

- Industrial Area Shallow Well for Quarterly Water Level Measurements
- Proposed Shallow (WT-1' + 10') and Intermediate Well (30'-35') Location
- Proposed Monitoring Wells for Quarterly Sampling
- Proposed Staff Gauge Location
- Proposed Quarterly Surface Water Sample
- Proposed DPT Sample
- SWMU 014/118 Boundaries
- Other SWMU/PRL Boundaries

Notes:
DPT=direct push technology
LOC=location of concern
PRL=potential release location
SWMU=solid waste management unit

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1/5/2023 TB
Source: HGL, ArcGIS Online Imagery

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APPENDIX A

Meeting Minutes

Revision 0 Meeting Minutes for June 6th and 7th, 2019
Attendees:

John Armstrong/FDEP
John Winters/FDEP
Anne Chrest/NASA
Mike Deliz/NASA
Lindsay Morgan/NASA
Dinh Vo/NASA
Ryan O'Meara/NASA
Dan Heggen/NASA
Michelle Moore/KEMCON
Deda Johansen/Jacobs
Patrick Lawler/Jacobs
Craig Kish/Jacobs
Jason Glasgow/Jacobs
Harlan Faircloth/CORE
Jim Langenbach/Geosyntec
Melissa Hensley/Geosyntec
Eric Sager/Geosyntec
Rebecca Daprato/Geosyntec
Mike Burcham/Geosyntec
Olivia Cain/Geosyntec
Audrey Batzer/Geosyntec
Davis Lofton/Geosyntec
Joe Bartlett/Geosyntec
Mark Speranza/Tetra Tech
Chris Pike/Tetra Tech
Mark Jonnet/Tetra Tech
Jen Buel/Tetra Tech
Sarah Damphousse/Tetra Tech
Alex Murphy/Tetra Tech
Chris Neumann/Tetra Tech
Scott Anderson/Tetra Tech (phone)
Krista Sommerfeldt/AECOM
Matt Zenker/AECOM
Richard Smith/HGL
Tim Jellett/HGL

1906-M01	Team	<u>Meeting Minutes and Miscellaneous Items</u> Team consensus reached that revision 1 meeting minutes for the April 2019 Team meeting are final. Team members acknowledged and did not object to the fact that the meeting minutes may become public as part of a final report at a later date. CAMP: please update and get any revised dates to NASA. **Action Item:** Per FDEP correspondence letter dated (March 22, 2019) RPM Ryan O'Meara will provide a site history of the Visitor Center Maintenance Area (SWMU 099) at a future team meeting. **Result**: Decision item 1906-D01, Action Item 1906-A01.
1906-M02	Harlan Faircloth/ CORE	<u>Components Cleaning Facility (CCF) (SWMU 030)</u> **Goal**: Present October 2018 direct push technology (DPT) sampling results, discuss air sparge system expansion activities, present Year 2 Operations, Maintenance and Monitoring (OM&M), present performance monitoring event number 5 and obtain consensus on path forward.

Discussion: The overall corrective action objective for CCF is to reduce concentrations of the contaminants of concern (COC) to below Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTL). The objective of the Hot Spot 1 Interim Measure (IM) is to treat the chlorinated volatile organic compounds (CVOC) high concentration plume where concentrations exceed their respective Natural Attenuation Default Concentration (NADC) to support transition to Monitored Natural Attenuation (MNA).

Hot Spot 1 site background and original air sparge system operations were presented at the meeting and in the provided advanced data package.

Year 1 Performance Monitoring:
Twelve monitoring wells were sampled quarterly. A reduction of COCs below NADCs was observed at all wells in the air sparge radius of influence at 9 months.
Periodic DPT sampling was conducted to ensure a full picture of contaminant distribution and concentration.

- July 2018 DPT sampling showing trans-1,2-dichloroethene (tDCE) and vinyl chloride (VC) above NADCs in the gap between the north and south arrays of air sparge wells.
- Additional DPT sampling in August 2018 was conducted to collect deeper samples and refine understanding of contamination in and around the air sparge well gap.

October 2018 DPT Sampling:
The National Aeronautics and Space Administration (NASA) decided to expand the CCF Hot Spot 1 air sparge system to address the High Concentration Plume between treatment lobes and treat deeper intervals in some areas (within the capacity of sparge trailer #3).
Supplemental DPT groundwater sampling in October 2018 to support design of air sparge system expansion.
Areas where cDCE, tDCE, and VC results were above NADCs were delineated (High Concentration Plume).

Hot Spot 1 Air Sparge System Expansion:
Expansion design included 14 new air sparge wells in the area between the lobes of the original air sparge wells and on the upgradient side of the southern lobe. These air sparge wells were

installed in December 2018 using a sonic drill rig and top of screen was set between 44.8 and 54.6 feet (ft) below land surface (BLS).
Eight new performance monitoring wells (IW0063 to IW0070) were installed using a sonic drill rig in February 2019.
The air sparge system expansion was completed in March 2019 (delayed due to government shutdown) and Hot Spot 1 air sparge system was restarted on 13 March 2019.

Year 2 System Performance:
The system has runtime efficiency of 76% from August 2018 through April 2019.

- Actively sparged for approximately 5,568 hours.
- System was down for 1,728.
- All shutdowns have been planned. There has been no downtime for mechanical issues since July 2018.

Performance Monitoring Event 5 was conducted in March 2019.
Twenty monitoring wells sampled for VOCs. Water level measurements were collected from 20 additional monitoring wells.
There were no NADC exceedances for any COC.
TCE detected in seven monitoring wells (1.1 to 16 µg/L); four results exceeded GCTL with the highest concentration in IW0045 in southern air sparge lobe.
cDCE was detected in 18 monitoring wells (0.86 to 250 µg/L); four results exceeded the GCTL with the highest concentration at IW0062 to the east of air sparge system.
tDCE was detected in 17 monitoring wells (2.7 to 200 µg/L); three results exceeded the GCTL with the highest concentration at IW0039 just east of expansion air sparge wells.
VC was detected in 14 monitoring wells (0.96 to 89 µg/L); 13 detections exceeded the GCTL, with the highest concentration at IW0069 on east side within southern expanded system.
Total molar sums for all four COCs were calculated for each of the original 12 performance monitoring wells:

- Baseline Total Molar Sum: 120.7 umol/L
- Performance Monitoring 5 Total Molar Sum: 15.3 umol/L
- 87% reduction in COC total molar sums

Two performance monitoring wells had increase in total molar sums when baseline and performance monitoring 5 sampling events compared (IW0025IS and IW0044).

- IW0025IS is outside of the air sparge system influence, and generally downgradient of the southern lobe.

- IW0044 is on the upgradient edge of the air sparge system, and reflects dissolved VOCs migrating into the system from the east.

Total mass for all four COCs were calculated for the baseline and performance monitoring 5 sampling events.

- Baseline Total Mass: 3.9 pounds
- Performance Monitoring 5 Total Mass: 0.01 pounds
- 3.89 pounds of mass have been removed

Conclusions:

The air sparge system operated reliably over the past 22 months.
Design pressures have been met during Year 2 operations.
Design airflow has been met with the exception of Zone 2, which generally receives 3.5-4 cfm rather than 5 cfm (new Pressure Relief Valve installed earlier this month is intended to improve Zone 2 flow).
COC concentrations are below respective NADCs in monitoring wells within the air sparge system influence.

DPT sampling showed some NADC exceedances, which led to the system expansion.
Mann Kendall statistics for monitoring wells up-, down-, and cross-gradient to the air sparge system identified no increasing trends.

The first post-expansion performance monitoring event will occur the first week of June 2019.
Recommend that air sparge system operations continue until COC concentrations are consistently below NADCs or GCTL exceedances begin to become asymptotic.
To evaluate the effectiveness of the expanded air sparge system, the same network of 20 performance monitoring wells should to be sampled quarterly for the remainder of 2019, after which continued operation should be evaluated. Concurrent water level measurement for 20 additional wells.

NASA anticipates that after sparging is completed at this site, the air sparge system will be excessed.

Team consensus reached to continue OM&M of the expanded CCF Hot Spot 1 air sparge system.

Team consensus on performance monitoring as follows:

- Quarterly 8260B analysis at IW0025IS, IW0037, IW0039, IW0041, IW0042, IW0044, IW0045, IW0046, IW0059 to IW0070.
- Quarterly water level measurements at IW0025IS, IW0037, IW0039, IW0041, IW0042, IW0044, IW0045, IW0046, IW0059 to IW0070, IW0003S, IW0003D, IW0031S, IW0031D, IW0004S, IW0041S, IW0004D, IW0011IS, IW0011ID, IW0011D, IW0021S, IW0017S, IW0026D, IW0036, IW005S, IW0051S, IW0051D, IW0005D, IW0012S, and IW0012D.

Results: Decision items 1906-D02 to D03

1906-M03 Eric Sager/ Geosyntec

Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237)

Goal: Present Phase I Solid Waste Management Unit (SWMU) assessment and confirmatory sampling results for per-and polyfluoralkyl substances (PFAS), present data gaps and proposed sampling locations for additional investigations, and obtain Team consensus on a path forward.

Discussion: A center-wide investigation was conducted for potential PFAS contamination in groundwater and surface water. Sample areas were divided into regions (Northern, Central, and Southern) and samples were collected from suspect source areas and for the purpose of general large-scale delineation. As part of the Phase I assessment, initial Locations of Concern (LOCs) associated with the storage, use, or release of PFAS-containing materials were identified. 464 direct push technology (DPT) groundwater, 3 monitoring well, and 37 surface water samples were collected by Geosyntec within select LOCs to evaluate the presence or absence of affected media. Note that one surface water location was sampled by two methods (direct grab and peristaltic pump); results were similar. Additional activities included:

- Reviewing readily available information and reports related to the use of aqueous film forming foam (AFFF), sewage treatment plants (STPs), and sludge disposal areas (SDAs);
- Completing site reconnaissance and conducting limited interviews with KSC personnel and facility managers at select LOCs; and
- Photographing AFFF storage and use locations.

The strategies for assessment were to:

- Identify a supply well for a decontamination source;

- Evaluate if perfluorooctanoic acid (PFOA) and/or perfluorooctane sulfonate (PFOS) are present in surface water and groundwater at the identified LOCs;
- Evaluate if the concentrations of PFOA, PFOS, and summation of PFOA/PFOS in groundwater exceeded the Florida Department of Environmental Protection (FDEP) provisional groundwater cleanup target level (GCTL) of 70 nanograms per liter (ng/L);
- Evaluate if the concentrations of PFOS, PFOA, and summation of PFOA/PFOS in surface water represent a potential exposure pathway and/or source of constituents to groundwater. There are currently no provisional surface water cleanup target levels.

Sources investigated include fire training facilities, fire stations, suspected AFFF release locations, Kennedy Space Center (KSC) STPs and SDAs, and KSC landfills. Domestic Treatment Plants (DTPs) and production and manufacturing facilities were identified as potential source areas but were not included in Phase I Assessment activities. Limited information was also reviewed on the construction of Ransom Road and Schwartz Road landfills.

Field activities were performed in accordance with FDEP Standard Operating Procedures (SOPs) and project-specific SOPs developed by Geosyntec to limit cross-contamination from consumer products and environmental conditions. Quality Assurance and Quality Control (QA/QC) samples were collected to evaluate laboratory precision, assess sampling equipment for potential sources of PFAS contamination, and evaluate potential impacts from cross-contamination. Duplicate samples and equipment blank samples were collected at an approximate rate of 10 percent. Matrix spike (MS) and MS duplicate samples were collected at an approximate ratio of 5 percent. Field blanks were collected at a rate of 1 per shipping container. A Stage 2A data validation was completed for all collected samples. Groundwater and surface water results were compared to the QA/QC sample results and the following information was reviewed to determine if data was usable to meet project objectives:

- Holding times
- Method blanks
- Laboratory control samples
- Isotope dilution standard

- Equipment sensitivity
- Equipment calibration
- Electronic data deliverable compared to Level IV report
- Reporting limit compared to provisional GCTLs

Validated groundwater data was screened against the FDEP provisional GCTL developed by the University of Florida. Validated surface water data was compared to the provisional GCTLs to identify potential exposure pathways and/or sources that could be contributing PFOA/PFOS to groundwater (or the reverse).

Summary of Center-Wide Results:

As presented during the April 2019 Meeting, Tetra Tech collected samples for PFAS at the Hydrocarbon Burn Facility and Schwartz Road Landfill. Including data collected by both Geosyntec and Tetra Tech, groundwater results exceeded the provisional GCTL in approximately 29 percent of samples. Of the samples collected by Geosyntec in the Northern and Southern regions of KSC, results exceeded the provisional GCTL in approximately 33 percent of groundwater samples. The highest concentrations observed were associated with fire stations and known or likely releases of AFFF. Some STPs and SDAs had concentrations that exceeded 10 times the provisional GCTL. PFOS was generally greater than PFOA, and both PFOS and PFOA were detected in all surface water samples collected.

Based on these results, additional CS activities are warranted to better understand the risks and conceptual site model. Additional sampling locations are proposed for each of the 33 identified LOCs. All surface water and sediment samples proposed are co-located and proposed sediment sample depths are from 0 to 0.5 feet (ft) below land surface (BLS). All soil samples are proposed from 0 to 0.5 ft BLS and 0.5 to 2 ft BLS, unless otherwise stated. DPT groundwater samples depths are proposed at screen centerpoints of 10, 25, 35, and 45 ft BLS.

Summary of Northern Region Results and Proposed Work Plans:

301 DPT groundwater samples from 37 locations, 27 surface water samples, and 3 monitoring well samples were collected. Provisional GCTL exceedances were observed in approximately 32 percent of

samples collected. The groundwater and surface water samples with the highest summation of PFOA/PFOS concentrations were from LOC 2. The highest number of exceedances were observed in the 25 ft BLS samples, but the maximum detected concentration of summation of PFOA/PFOS in the northern area was collected from 10 ft BLS.

LOC 1 – Flight Crew Rescue Training Area (SWMU 005): Used as a heavy equipment yard and materials storage area from 1962 to 1966. From 1984 to 2004, the KSC Fire and Rescue used LOC 1 as a training area for the Space Transportation System rescue procedure. Limited information was reviewed, and no samples were collected for PFAS.

Team consensus reached to continue Solid Waste Management Unit (SWMU) Assessment (SA) activities at LOC 1 to identify potential sources and spills of AFFF associated with the area's use as a KSC Fire and Rescue training area.

LOC 2 – Fire Station #2 (Potential Release Location [PRL] 187): Constructed in 2008 and is used for housing fire station personnel and storing AFFF and equipment. The fire station is currently operational and there have been known releases of AFFF into the retention pond to the west of the building. Groundwater sample results were greater than 100 times the provisional GCTL and surface water detections were more than 700 ng/L. The National Aeronautics and Space Administration (NASA) is working to revise procedures at KSC to no longer release AFFF to the environment.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from AFFF usage at LOC 2 (4 soil, 8 DPT groundwater, and 2 sediment samples at the previous collected surface water locations).

LOC 12 – Former STP #17 and Percolation Pond (PRL 087): Constructed in 1975 to treat domestic waste from the Landing Aids Control Building from the mid-1970s to the 1990s. The building was demolished in 1998 and the percolation pond was abandoned in place. Limited information reviewed on construction/abandonment of the pond (data gap). One groundwater sample was collected near LOC 12 and exceeded the provisional GCTL for summation of PFOA/PFOS.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from STP operations and sludge disposal activities at LOC 12 [4 soil (depths to be determined [TBD]), 1 DPT groundwater, 3 surface water, and 3 sediment samples].

LOC 15 – Remote Launch Vehicle Hanger (PRL 187): Constructed in 2000 to accommodate aircraft. An interview with facility personnel indicated that a foam suppression system was inside the hangar and discharged, but information could not be verified. Past reporting for the hangar indicates a water-supplied system was used for fire suppression within the facility. DPT sampling results surrounding the facility were below the provisional GTCLs.

Team consensus was reached for No Further Action (NFA) at LOC 15.

South Shuttle Landing Facility: Groundwater samples collected were greater than 10 and 100 times the provisional GCTL, and surface water samples had detections above 70 ng/L.

Team consensus reached for sampling plan to further investigate extent of PFAS contamination in the South Shuttle Landing Facility area (10 sediment and 2 surface water samples).

LOC 3 – Former Fire Station #2 (SWMU 105): Constructed in 1967 as the base for crews in VAB, SLF, and LC39 areas. A spill report indicated 2.5 gallons of Class A foam entered a floor drain in the highbay that discharges to grade approximately 30 feet east of the building. Groundwater results near LOC 3 exceeded 10, 100, and 1,000 times the provisional GCTL and concentrations were above the provisional GCTL at all sample depths.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from AFFF usage/discharge at LOC 3 (5 soil, 2 DPT groundwater, and 1 surface water, and 1 sediment samples).

South Vehicle Assembly Building (VAB) Area: Groundwater samples collected exceeded the provisional GCTL at many locations. Surface water samples had detections above 70 ng/L.

Team consensus reached to implement proposed sampling work plan to further investigate extent of PFAS contamination in the South VAB area (3 DPT groundwater, 6 sediment, and 2 surface water samples).

LOC 4 – Fire Station #3 (SWMU 106): Constructed in 1991 and formerly known as Fire Station #6. The facility is currently active and houses fire-fighting equipment and personnel. No known storage, spills, or discharges of AFFF. Groundwater sample results exceeded 100 times the provisional GCTL, and the surface water sample had a detection of 1,593 ng/L.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from potential AFFF usage at LOC 4 (7 soil, 5 DPT groundwater, 5 sediment, and 4 surface water samples).

LOC 5 – Former STP #4 and SDA: Constructed in 1966 and converted to a lift station in 2001. Effluent was discharged into several locations including a polishing pond before discharge into Banana Creek. Land application of effluent occurred in and around KSC from 1986 to 2001 and residuals were reportedly used as cover for Schwartz Road Landfill and transported to Cocoa Beach Wastewater Treatment Plant. Limited information reviewed on the location of all SDAs. Some DPT samples collected exceeded 10 times the provisional GCTL. The highest concentrations were in potential SDAs. Some surface water detections were greater than 70 ng/L.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from STP operations and effluent and sludge disposal activities at LOC 5 (17 soil, 2 DPT groundwater, 2 sediment, and 2 surface water samples) and continue SA to identify locations of SDAs associated with STP #4.

Northern Vehicle Assembly Building: One groundwater sample was greater than the provisional GCTL and PFOS/PFOA was detected above 70 ng/L in some surface water samples.

Team consensus reached to implement proposed sampling work plan to further investigate extent of PFAS contamination in the Northern Vehicle Assembly Building area (6 sediment samples).

LOC 6 – Former STP #5 and Percolation Pond (SWMU 008): Formerly located in within the Launch Complex (LC) 39A area. The STP discharged treated effluent to the swale adjacent to the western perimeter fence and to the evaporation/ percolation pond west of the launch tower. Limited information was reviewed on the construction/abandonment of the pond (data gap). No samples were collected for PFAS at LOC 6.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 6 [5 soil (depths TBD), 2 DPT groundwater, 1 surface water, and 1 sediment samples].

LC39A Area: Four Domestic Treatment Plants were identified, but limited information was reviewed. The surface water sample collected north of LC39A was greater than 70 ng/L.

Team consensus reached to implement proposed sampling work plan (3 sediment and 2 surface water samples) and to continue SA activities to investigate Domestic Treatment Plant operations in the LC39A area.

LOC 7 – Former STP #6 and Percolation Pond (SWMU 009): Formerly located within LC39B to serve structures in and around the pad. The STP discharge treated effluent to the swale adjacent to the western perimeter fence and evaporation/percolation pond west of launch tower. Limited information was reviewed on the construction/abandonment of the pond (data gap). Monitoring well groundwater samples collected north of LOC 7 had detections less than the provisional GCTL.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 7 [5 soil (depths TBD), 1 monitoring well, and 2 DPT groundwater samples].

LC 39B Area: Two Domestic Treatment Plants were identified, but limited information was reviewed. No samples were collected in the LC39B area.

Team consensus reached to continue SA activities to investigate DTPs in the LC39B area.

LOC 8 – Former STP #7 (SWMU 074): Likely located in the Press Site Area, but limited information was reviewed on the historical operations and effluent disposal activities. No samples were collected for PFAS at LOC 8.

Team consensus reached to continue SA activities to further investigate location of former STP #7 and area of effluent and/or sludge disposal.

LOC 9 – Former STP #8 and Drainfield: Constructed in 1978 and replaced with a lift station in 2002. Treated wastewater from operations and logistics building at LC39A and released effluent to drainfield near the STP building. Limited information was reviewed on the construction/abandonment of the pond (data gap). No samples were collected for PFAS at LOC 9.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 9 [5 soil (depths TBD), 1 DPT groundwater, 3 sediment, and 3 surface water samples].

LOC 10 – Former STP #9 and Abandoned Treatment Pond (SWMU 030): Located in the Components Cleaning Facility (CCF) area and constructed in 1967 to support the propellants storage and service area. Operated until 1991 when influent was rerouted to STP #4 (LOC 5). Exact location of former STP building and treatment pond unknown (data gap). One groundwater sample collected near LOC 10 was below the provisional GCTL.

Team consensus reached to continue SA activities to further investigate exact location of former STP #9 and abandoned treatment pond.

LOC 11 – Former STP #12 and Percolation Pond (PRL 074): Formerly located adjacent to the Hazardous Waste Staging Area and

removed some time between 1985 and 1990. The percolation pond was filled and the STP was replaced with a lift station. No samples were collected for PFAS at LOC 11.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 11 [4 soil (depths TBD), 2 DPT groundwater, 1 surface water, and 1 sediment samples].

LOC 13 – Former STP #18 (PRL 216): Constructed in 1973 and used to store fire equipment. Closed in place and demolished by fire in 1991. No information reviewed on effluent or sludge disposal, or storage/use of AFFF. No samples were collected for PFAS at LOC 13.

Team consensus reached to implement proposed sampling work plan (1 soil and 1 DPT groundwater samples) and to continue SA activities to investigate sludge and/or effluent disposal at STP #18 (LOC 13).

LOC 14 – Shuttle Landing Facility Runway (PRL 186): Primary end-of-mission landing site for space shuttle orbiters. Former Microwave Scanning Beam Landing System located at northwest end of the runway and stores fire suppression equipment. Morpheus crash which occurred at the north end was extinguished with AFFF. A vehicle caught fire in 2018 on the west side of the runway, but no additional information was reviewed. Groundwater samples collected near the Morpheus crash were greater than the provisional GCTL and detections in surface water around the north end of the runway were greater than 70 ng/L.

Team consensus reached to implement proposed sampling work plan at (5 soil, 3 DPT groundwater, and 5 sediment samples) and continue SA activities to identify location of former Microwave Scanning Beam Landing System and location of vehicle fire (potential use of AFFF) at LOC 14.

<u>Summary of Central Region Results and Proposed Work Plan</u>:

Approximately 231 DPT groundwater samples, 34 surface water samples, and 66 monitoring well samples were collected by Tetra Tech as of April 2019.

LOC 16 – Hydrocarbon Burn Facility: Results from sampling at LOC 16 were presented by Tetra Tech at the April 2019 KSC Remediation Team meeting.

LOC 17 – Former STP #15 and Polishing Pond (SWMU 016): Used to treat wastewater from the Former Printed Circuit Board Shop and Warehouse Office at Contractor's Road Heavy Equipment Area from 1971 to 1986 and a grease treatment plant from 1986 to 1996. Building abandoned and limited information reviewed on the construction or abandonment of the pond (data gap). No samples were collected for PFAS at LOC 17.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 17 [5 soil (depths TBD) and 2 DPT groundwater samples].

LOC 18 – Schwartz Road Landfill: Results from sampling at LOC 16 were presented by Tetra Tech at the April 2019 KSC Remediation Team meeting.

Summary of Southern Region Results and Proposed Work Plans:

163 DPT groundwater samples from 41 locations and, 10 surface water samples from 9 locations were collected. Provisional GCTL exceedances were observed in approximately 34 percent of samples collected. The groundwater sample collected with the highest summation of PFOA/PFOS concentrations were from LOC 19 and the highest surface water sample was collected in the Region I Stormwater pond located in the eastern Industrial Area. PFOA was greater than PFOS in the two surface water samples collected from LOC 30.

LOC 19 – Fire Station #1 (PRL 122): Formerly Fire Station #4 and constructed in 1964. Active and used as the primary fire/emergency response in the Industrial Area. Houses crews and acts as storage and repair facility for spent or expired fire extinguishers. There were no documented releases of AFFF. Groundwater results exceeded 10, 100, and 1,000 times the provisional GCTL. Step-out samples were collected a large distance from the fire station and results were below the provisional GCTL.

Team consensus reached to implement proposed sampling work plan at LOC 19 (4 soil and 3 DPT groundwater samples).

LOC 20 – STP #1 and SDA (PRL 063): Constructed in 1983. Located within SWMU 067 and received solids from all of KSC from 1986 to 1991. Numerous sewage spills were reported. Soil surrounding STP #1 building was excavated in the past, but limited information was reviewed (data gap). Limited information was reviewed on the construction/abandonment of the polishing pond (data gap). Groundwater sample results were greater than the provisional GCTL, with the highest concentration in the SDA (greater than 10 times the provisional GCTL). Detections in surface water near LOC 20 were greater than 70 ng/L. Team suggested looking at the existing monitoring well network in the area to propose sample collection from monitoring wells.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 20 [17 soil (depths TBD at STP #1 building and former polishing pond), 4 DPT groundwater, 8 surface water, and 9 sediment samples).

LOC 21 – Former STP #2 and Effluent Disposal Area (PRL 086): Treated domestic water and other operation discharges from the Hypergol Maintenance Facility from 1964 to 1985. Effluent was discharged into the borrow pit to the east. One surface water sample was collected within LOC 21 and summation of PFOA/PFOS was 27 ng/L.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 21 (1 soil, 1 DPT groundwater, 2 sediment, and 1 surface water samples).

LOC 22 – Former STP #3 and Percolation Pond (PRL 090): Constructed in 1998 and treated photo-processing wastewater from the TEL-4 Central Telemetry Site. Discharged effluent into to contiguous percolation ponds. Limited information was reviewed on the construction/abandonment of the ponds (data gap). No samples were collected for PFAS at LOC 22.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 22 [5 soil (depths TBD in percolation pond); 2 DPT groundwater, 2 sediment, and 2 surface water samples].

LOC 23 – Former STP #10 and Effluent Disposal Area (SWMU 009): Constructed in 1967 and treated wastewater from the Visitors Information Center Maintenance area and discharged effluent to retention pond, wash water holding pond, and drainage swale. Removed in 1997. Excavated and disturbed areas in the western portion of LOC 23. No samples were collected for PFAS at LOC 23.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 23 (8 soil, 5 DPT groundwater, 2 sediment, and 2 surface water samples).

LOC 24 – Former STP #11 and Percolation Pond (SWMU 086): Located at the former Spaceflight Tracking and Data Network Station and constructed in 1970 to treat wastewater from the former Operations and Support Building. Effluent was discharged into a percolation pond and sludge was hauled off site to an unknown location. Limited information was reviewed on the construction/abandonment of the pond (data gap). No samples were collected for PFAS at LOC 24.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 24 [5 soil (depths TBD in percolation pond) and 2 DPT groundwater samples].

LOC 25 – Former STP #13 and Effluent Disposal Area (SWMU 077): Constructed in 1972 to treat wastewater from Vertical Processing Facility Area. Effluent piped to disposal pond (data gap - construction/abandonment of pond). Facility demolished and removed in late 1970s. No samples were collected for PFAS at LOC 25 but DPT groundwater samples collected in eastern industrial area greater than the provisional GCTLs.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent disposal at LOC 25 (6 soil and 2 DPT groundwater samples).

Eastern Industrial Area: Groundwater results greater than provisional GCTLs (greater than 10 times the provisional GCTL at one location).

Team consensus reached to implement proposed sampling work plan to further investigate extent of PFAS contamination in Eastern Industrial Area (5 sediment samples).

LOC 26 – Former STP #14 and Abandoned Treatment Pond (SWMU 021): Constructed in 1971 to process wastewater from Ransom Road Sandblast Facility and Industrial Area. Drainage ditch adjacent to STP may have impacted site. STP and treatment pond abandoned in place in 1986. No information was reviewed on construction and abandonment of pond (data gap). No samples were collected for PFAS at LOC 26.

Team consensus reached to implement proposed sampling work plan to investigate impacts of STP operations and effluent/sludge discharge at LOC 26 (3 soil, 2 DPT groundwater, 1 sediment, and 1 surface water samples).

LOC 27 – Former STP #16 and Abandoned Treatment Pond: Treated domestic waste from former Bus Maintenance Facility and Former Pass and Identification Building. Effluent was discharged into pond which only received effluent from STP #16. Exact location of former STP and treatment pond unknown (data gap) and additional investigation is warranted. No samples were collected for PFAS at LOC 27.

Team consensus reached to implement proposed sampling work plan to investigate impacts from STP operations and effluent discharge at LOC 27 (1 surface water and 1 sediment sample).

LOC 28 – Central Instrumentation Facility Former Residuals Application Area (PRL 077): Used for disposal of domestic waste sludge from early 1960s to 1986. Received sludge from STP #1 and was reportedly used most frequently in comparison with other disposal sites. One DPT groundwater sampling result was greater than provisional GCTL.

Team consensus reached to implement proposed sampling work plan to further investigate impacts from sludge disposal activities at LOC 28 (2 soil samples).

LOC 29 – Operations and Checkout Building Former Residuals Application Area (PRL 077): Used for disposal of domestic waste sludge from early 1960s to 1986. Land application primarily in grassy areas east and west of parking lot. Received sludge from STP #1. DPT groundwater sampling results were below provisional GCTLs.

Team reached consensus to implement proposed sampling work plan to further investigate impacts from sludge disposal activities at LOC 29 (2 soil samples).

LOC 30 – Kennedy Athletic, Recreation, and Social Park II (PRL 140): Includes recreational facilities, restroom, sanitary leaching field, and pavilion. Site used to stage construction materials, borrow pits for road construction, solid waste containers, landscaping materials, and former underground storage tanks (UST). Spill of fire suppressant foam reported in 1992. Volume and location of spill were not identified, and continued SA is warranted. DPT groundwater sampling results were above the provisional GCTL. PFOA concentrations were greater than PFOS concentrations in surface water samples.

Team consensus reached to implement proposed sampling work plan to further investigate extent of PFAS contamination at LOC 30 (3 DPT groundwater, 4 soil, 3 sediment, and 1 surface water samples) and to continue SA activities to determine the location of reported AFFF spill.

LOC 31 – Ransom Road Sandblast Yard (SWMU 021): Used by NASA as a sandblasting area and painting facility since 1967. Objects are degreased and steam-cleaned prior to delivery. Spill reported in 2008 of approximately 0.25 gallons of 3% Ansulite Firefighting foam from portable tank onto the painted/sealed cement pad in covered garage. Limited information reviewed regarding spill details-continued SA warranted. No samples were collected at LOC 31.

Team consensus reached to continue SA activities to investigate building/location of AFFF spill at LOC 31.

LOC 32 – Base Support Building (SWMU 014): Also known as Maintenance and Operations Building. Constructed in 1964 and includes electrical, mechanical, carpentry, metal, and paint shops, steam cleaning, maintenance area, oil/water separator and treatment pond. Also served as vehicle wash down area. Spill reported in 2006: 20 gallons of foam and water from fire engine plumbing discharged during repairs/maintenance. DPT groundwater sampling results greater than 100 times the provisional GCTL in and around LOC 32.

Team consensus reached to implement proposed sampling work plan to further investigate extent of foam spill impacts at LOC 32 (1 soil, 1 sediment, and 1 surface water sample).

Western Industrial Area: One groundwater sample was collected that was greater than 100 times the provisional GCTL.

Team consensus reached to implement proposed sampling work plan to further investigate extent of PFAS contamination in Western Industrial area (7 DPT groundwater, 1 sediment, and 1 surface water samples).

LOC 33 – Ransom Road Landfill (SWMU 003): Operated from 1964 to 1970 during KSC construction phase. Unlined trenches exposing shallow aquifer were present during landfilling. Information regarding landfill construction was not reviewed. DPT groundwater sampling results were above the provisional GCTL.

Team consensus reached to continue SA activities to investigate landfill construction/trenching at LOC 33.

<u>Conclusions</u>:

The maximum observed concentrations of the summation of PFOA/PFOS were associated with Fire Stations. Generally, concentrations of PFOS and PFOA decreased with depth, with the fewest number of provisional GCTL exceedances were observed in the 45 ft BLS interval. Continued SA and CS activities are recommended and include:

- Investigating additional facilities that were not included under the Phase I assessment or where limited information was reviewed;
- Investigating the identified data gaps from Phase I SA; and
- Identifying existing monitoring wells within the initial LOCs.

Team discussed resampling at previous surface water sample locations to assess potential temporary changes in concentrations. Team also discussed tracking drainage patterns to determine where surface water is coming from for different stormwater ponds, basins, and other water bodies.

NASA discussed the proposed response to the detected exceedances of PFOS and PFOA provisional GCTLs: new KSC policy to no longer discharge AFFF to grade at KSC facilities, except to put out hydrocarbon fires. If AFFF needs to be used, a spill report will be submitted, and an investigation will be conducted. NASA is identifying and responding to PFAS concerns. Non-potable well sampling has been recently conducted on KSC.

Results: Decision item 1906-D04 to D41

1906-M04 Craig Kish/ Jacobs

Unnumbered Operational Area (UNOA) (PRL 229)
Goal: Summarize confirmation sampling (CS) activities, results, and obtain Team consensus on path forward.

Discussion: This Solid Waste Management Unit (SWMU) Assessment included three non-contiguous areas:
east yard and railroad tie disposal area (RTDA) east of Phillips Parkway and North of Launch Complex 39A, and the Communications Distribution Center & Switching Center (CD&SC) Siding in northwest quadrant of Kennedy Space Center (KSC) Industrial area, adjacent to M6-0138.
The KSC Remediation Team decided to perform a CS at RTDA. There were no concerns identified for the East Yard or CD&SC Siding.

There is no active facility and there are no personnel on site. The area is considered ecological habitat, but screening will be done to human health risk values first. The SWMU assessment identified two large piles of discarded railroad (RR) ties. Those piles were designated as Location of Concern 1 (LOC 1).

Revision 2 Meeting Minutes for the KSCRT Meeting - September 15, 16, and 17 , 2021

Attendees:

1. Bruce Moore/FDEP
2. Jennifer Farrell/FDEP
3. Mike Deliz/NASA
4. Ryan O'Meara/NASA
5. Deda Johansen/NASA
6. Anne Chrest/NASA
7. Natasha Darre/NASA
8. Dinh Vo/NASA
9. Michelle Moore/NEMCON
10. Mark Speranza/Tetra Tech
11. Mark Jonnet/Tetra Tech
12. Jennifer Buel/Tetra Tech
13. Alex Murphy/Tetra Tech
14. Chris Neumann/Tetra Tech
15. James Lloyd/Tetra Tech
16. Sarah Damphousse/Tetra Tech
17. Chris Pike/Tetra Tech
18. Debbie Wilson/Tetra Tech
19. Jennifer Joyal/AECOM
20. Linnea King Clark/AECOM
21. Josh Lerch/AECOM
22. Brittany Follett/AECOM
23. Randy Sillan/AECOM
24. Matthew Zenker/AECOM
25. Chad Lee/AECOM
26. Richard Smith/HGL
27. Scott Starr/HGL
28. Howard Fowler/HGL
29. Brad Mitchell/HGL
30. Cady Carol/HGL

2109-M01 Team

Meeting Minutes and Miscellaneous Items

Team consensus was reached that Revision 0 of the meeting minutes and action/decision items for the June 2021 Team meeting will become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date **(2109-D01).**

Open action items were reviewed by the Team. The following action item was closed out:

Review of Site Status and Deliverables, December 2020: Mike will summarize the look ahead and send a detailed version to Florida Department of Environmental Protection (FDEP) that will provide site histories, what NASA has completed, and where their path forward (including plume maps). FDEP inquired if they could also obtain a copy of the slides being presented today. NASA confirmed they would provide the slides via large file transfer.

Look ahead and maps have been provided to FDEP by NASA **(Closed 2012-A03).**

Area South of K7-0516 and Eastern Component Cleaning Facility Solid Waste Management Unit (SWMU) #030, Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: FDEP requested that the sampling plans for 2021 be documented in a

2109-M09 Jennifer Joyal/AECOM

KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021

Goal: The goal of the ADP is to present the Phase II SWMU Assessment sampling results for per- and polyfluoroalkyl substances (PFAS) and test consensus on a path forward for many of the LOCs and AOPCs. Decisions will be deferred pending further evaluation for some LOCs and AOPCs.

Discussion: The Center-wide PFAS Phase II SWMU Assessment was divided into the northern, central, and southern regions for sampling and recommendations on a path forward. Thirty-three locations of concern (LOCs) and nineteen areas of potential concern (AOPCs) have been identified. There are a total of 52 LOCs and AOPCs plus the Towway Area.

NASA noted that there are 10 LOCs that are in the process of being contracted for investigation as Solid Waste Management Units (SWMUs). The investigations will follow the Site Assessment (SA) procedure under Chapter 62-780.600 of the Florida Administrative Code. NASA plans to move additional LOCs into SA in the future as funding becomes available. Sites are generally prioritized based on PFAS concentrations.

Potential surface water impacts were noted at several LOCs. Note that surface water impacts will be evaluated regionally as well as locally

Sediment samples were collected at several locations and the results are included in the Advance Data Package for reference. Since there are not established or provisional cleanup target levels for sediment, the results retained for future use.

LOC 1 is the former Flight Crew Rescue Training Area. Phase 1 SWMU Assessment and Confirmatory Sampling Report recommended continued SWMU Assessment activities. The area was potentially used to spread residuals from Sewage Treatment Plant #4 (STP #4) (LOC 5). Phase III confirmatory sampling (CS) will include groundwater and soil sampling. Phase III CS is underway and results will be presented at a future meeting. Surface

water samples contained perfluorooctanesulfonic acid (PFOS) concentrations greater than Florida's surface water screening level (SWSL).

LOC 2 is the area of current Fire Station #2 adjacent to the Shuttle Landing Facility (SLF) with its Towway. Phase I and II CS results determined that perfluorooctanoic acid (PFOA) and PFOS concentrations in groundwater exceed Florida's provisional groundwater cleanup target level (pGCTL). Groundwater impacts may be commingled with PFOA and PFOS affected groundwater associated with adjacent LOC 12, Former STP#17, and Percolation Pond. PFOA and PFOS concentrations in soil are greater than Florida's provisional soil cleanup target levels (pSCTLs) for leachability. PFOS concentrations in surface water are greater than the SWSL. Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12) **(2109-D14).**

LOC 3 is Former Fire Station #2. Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater exceeded the pGCTL. PFOA concentrations in soil were below the pSCTL; however, PFOS concentrations in soil were greater than pSCTLs for leachability. PFOS concentrations in surface water were greater than SWSL.

NASA added that there is a permitted stormwater basin in the area of LOC 3. Team consensus was reached to proceed with SA activities under SWMU #105, Former Fire Station #2 Area (includes PRL #237 LOC 3) **(2109-D15).**

LOC 4 is Fire Station #3, formerly known as Fire Station #6. Two of four surface water samples planned for the Phase II CS were collected. One proposed location was dry and the other required clearing for access; sampling was deferred. Phase 1 and 2 CS results determined PFOA and PFOS concentrations in groundwater exceeded the pGCTL. In soils, PFOA concentrations were below pSCTL and PFOS concentrations were greater than the leachability pSCTL. PFOS concentrations in surface water was greater than SWSL.

Team consensus was reached to proceed with site assessment activities under SWMU #106, Fire Station #3 Area (formerly known as Fire Station #6; includes PRL #237 LOC 4) **(2109-D16).**

LOC 5 is the former Sewage Treatment Plant #4 and Sludge Disposal Area and the surrounding area north of the Vehicle Assembly Building (VAB). Three additional DPT groundwater sample locations were added to the CS Work Plan to address FDEP's Phase 1 PFAS SWMU Assessment and Confirmatory Sampling Report review letter dated August 25, 2020. Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater exceed the pGCTL. PFOA and PFOS concentrations in soil were below the pSCTL. PFOS concentrations in surface water were greater than SWSL.

Phase III CS (now underway) will investigate the mosquito impoundment area to the north where treated water was discharged and an area where residuals from STP#4 may have been spread. AECOM recommended that LOC 5 be moved under SA for SWMU #115, VAB North Area. AECOM is still finishing out sampling in this area as part of this current investigation.

Team consensus was reached to proceed with SA activities for LOC 5 under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10) **(2109-D17).**

LOC 6 is the location for the Former Sewage Treatment Plant #5 and Percolation Pond at Launch Complex 39A (LC39A). Groundwater and soil Phase II CS activities were deferred due to site constraints; sampling will be conducted during the Phase III CS. For surface water, one sample was collected and PFOA and PFOS concentrations were less than SWSLs. After the surface water sampling discussion for LOC 7 (below), Team consensus was reached to collect one surface water sample at LOC 6 from the former percolation pond **(2109-D18).** Phase III CS sampling is underway; the requested surface water sample will be collected during this field event.

LOC 7 is the location of the Former Sewage Treatment Plant #6 and Percolation Pond at LC39B. PFOA and PFOS concentrations in groundwater were below pGCTLs. In the 1 of 5 planned soil

locations sampled, PFOA and PFOS concentrations were below pSCTLS. Four proposed locations were within the former percolation pond, which had standing water. No surface water samples were collected.

FDEP inquired why a surface water sample wasn't collected at this location and a discussion ensued. The pond sometimes contains water and sometimes not. It is believed that some sediment is present.

FDEP stated the surface water sample would be sufficient for now.

Team consensus was reached to collect one surface water sample from the former percolation pond at LOC 7 **(2109-D19).** Phase III CS sampling is currently underway; the requested surface water sample will be collected during this field event. For consistency, a surface water sample was also added for the pond at LOC 6, as described above. NASA asked Tetra Tech to share that PFAS sampling data from site wells in the launch pad areas.

LOC 8 is the Former Sewage Treatment Plant #7 in the Press Site area. SWMU assessment activities were continued to investigate sludge and/or effluent disposal locations associated with former STP #7. Data gap investigations did not reveal where the STP may have discharged to. PFOS concentrations in groundwater exceed the pGCTL. PFOS concentrations in surface water were greater than the SWSL.

Phase III CS recommendations include additional groundwater sampling to further evaluate if the impacts are associated with SWMU #105, Former Fire Station #2 area or an unknown aqueous film-forming foam (AFFF) release location. Forensics indicate a likely AFFF source. Phase III CS includes soil sampling and is underway.

LOC 9 is the Former Sewage Treatment Plant #8 and Drainfield Area in the LC39A Operations Support Building Area. PFOA concentrations in groundwater were less than pGCTL; PFOS concentrations exceed the pGCTL. PFOA and PFOS concentrations in soil were below the pSCTL. For surface water, PFOA

concentration were less than SWSL and PFOS concentrations were greater than SWSL.

Team consensus was reached to proceed with site assessment activities under SWMU #111, LC39 Observation Support Building Area (includes PRL #237 LOC 9) **(2109-D20).**

LOC 10 is the location of the Former Sewage Treatment Plant #9 and Abandoned Treatment Pond north of Converter Compressor Road. Phase II activities identified the abandoned treatment pond location west of where the Phase I CS groundwater sample was collected. Groundwater PFOA and PFOS concentrations there were below the pGCTL. Results from one of two nearby monitoring wells at Components Cleaning Facility (CCF, SWMU #030) exceeded the pGCTL. Recent CCF investigative derived waste (IDW) samples were above pGCTLs. Phase III CS sampling is underway and will include an evaluation of potential data gaps for the groundwater exceedance at CCF.

LOC 11 is the Former Sewage Treatment Plant #12 and Percolation Pond southeast of the intersection of Saturn Causeway and Fluid Servicing Road. The planned DPT location at the former STP was not sampled. The sample conducted at the former percolation pond had results below the pGCTL. In soils (3 of 4 planned locations sampled), PFOA and PFOS concentrations were below pSCTLs. A sample was not collected from the former STP area due to concrete and multiple utilities. For surface water, PFOS concentrations were greater than SWSL. The concentration (PFOS 54.80 ng/L) is similar to other samples collected from the Turn Basin. STP #12 is unlikely to be the source of PFAS detections in the Turn Basin. The source is likely the former Fire Station #2 (PRL #237 LOC 3) due to stormwater conveyance in this region. Surface water impacts will continue to be evaluated regionally to better understand the fate and transport of PFAS in groundwater and surface water. The groundwater sampling at the former STP #12 will be collected and the results will be presented to the Team.

LOC 12 is the Former Sewage Treatment Plant #17 and Percolation Pond near the SLF, which is adjacent to LOC 2. Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater exceeded pGCTLs. Groundwater impacts may be

commingled with PFAS-affected groundwater associated with LOC 2, Fire Station #2. PFOA and PFOS concentrations in soil were below pSCTLs. PFOS concentrations in surface water were greater than the SWSL.

Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12) **(2109-D21).**

LOC 13 is the area of the Former Sewage Treatment Plant #18 on Beach Road. SWMU assessment activities were continued to investigate sludge and/or effluent disposal locations associated with former STP #18. Phase II CS groundwater sampling has been delayed due to clearing requirements; groundwater samples will be collected under the Phase III CS effort. For soils, PFOA and PFOS concentrations were below pSCTLs. No surface water was observed and no sampling was recommended. Phase III CS sampling is currently underway.

LOC 14 encompasses the portion of the SLF Runway north of 30th Street NW. It includes the area where the Morpheus lander fire occurred, and possibly the location of the reported vehicle fire. AECOM is continuing to look for information regarding the location of the former Microwave Scanning Beam Landing System which reportedly was on the north end of the SLF and had fire suppression equipment. Multiple Phase I and II CS groundwater samples contained PFOA and PFOS concentrations greater than pGCTLs. In soils, PFOA and PFOS concentrations were above the leachability pSCTL. Multiple surface water samples had PFOS concentrations greater than the SWSL.

The Team discussed the surface water results. The Morpheus test area is a source on the north, but AOPC 1 (Former SLF Fire Rescue Vehicle Building) is near midfield and Fire Station #2 and the Towway (SWMU #114) is at the south. The surface water around the SLF will be evaluated on a regional basis. FDEP agreed this was a good approach.

The Team reached consensus to proceed with site assessment activities for LOC 14 under SWMU #119, Morpheus Test Area (included PRL #237 LOC 14 North) **(2109-D22).**

The central area of the SLF will be further evaluated in conjunction with AOPC 1, Former SLF Fire Rescue Vehicle Building. Phase III CS sampling is underway.

According to interviews. AOPC 1 was used for emergency vehicle parking, former pump testing area for fire rescue activities, and former AFFF storage area. Phase III CS will include groundwater and soil sampling. Team consensus was reached to add two surface water sampling locations. One sample location will be north of the former facility, and the other sample will be collected from the eastern swale along the SLF Runway **(2109-D23).**

LOC 15 is the area of the Remote Launch Vehicle Hangar on the southeast side of the SLF. (Note: sampling results not discussed during the presentation; additional information provided for completeness.)

Sixteen DPT groundwater samples were collected from four locations around the hangar (one from each side) during the Phase I CS. Concentrations of PFOA and PFOS were below the pGCTL in all samples. The maximum detection at 10 ft below land surface (bls) was 24 ng/L at DPT0006; all other samples reported concentrations below detection limits. There were no PFOA or PFOS detections at 25 ft bls. Maximum detection at 35 ft bls was 8.2 ng/L at DPT0024; all other samples reported concentrations below detection limits. Maximum detection at 45 ft bls was 12 ng/L at DPT0006; all other samples reported concentrations below detection limits. Team consensus was reached for no further action during the June 2019 KSCRT meeting (decision item 1906-D07). The area is being further evaluated under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).

Towway Area (referred to as South SLF in the Phase I SWMU Assessment and Confirmatory Sampling Report) did not have a LOC or AOPC number assigned. Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater exceed the pGCTL. The highest detection was near the mid-point of the Towway. Groundwater impacts may be commingled with PFOA and PFOS affected groundwater associated with LOC 2, Fire Station #2. PFOA and PFOS concentrations in soil were less than pSCTLs. PFOS concentrations in surface water were greater than the SWSL.

Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12) **(2109-D24).**

The Hydrocarbon Burn Facility (SWMU #007) includes **LOC 16** (Hydrocarbon Burn Facility, SWMU #007) and **LOC 18**, Schwartz Road Landfill (SWMU #002). These areas are being evaluated under a separate contract.

LOC 17 is the Former Sewage Treatment Plant #15 and Polishing Pond (SWMU #016). This site is located within the footprint of SWMU #055 (Contractors Road Heavy Equipment Area [CRHE]). Groundwater (1 of 2 planned DPT locations sampled) revealed PFOS concentrations exceeded the pGCTL at the LOC. The eastern DPT location was within an area requiring clearing; sampling deferred. Two CRHE monitoring wells were sampled; results came in below pGCTLs. In soil (1 of 5 planned locations sampled), PFOA and PFOS concentrations were below pSCTLs. The eastern soil sampling locations were within an area requiring clearing; sampling deferred. NASA is having liquid IDW sampled for PFAS; one purpose is to discover the potential presence at existing sites. When the potential for PFAS is found, NASA has begun selecting a set of site monitoring wells to investigate a site further for PFAS.

Team consensus was reached to proceed with LOC 17 site assessment activities under SWMU #055, Contractors Road Heavy Equipment Area **(2109-D25).**

LOC 19 is Fire Station #1 in the Industrial Area. The Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater exceed the pGCTLs. In soils, PFOA concentrations were below pSCTLs and PFOS concentrations were greater than pSCTLs for leachability. There is no surface water in the immediate vicinity of the fire station. Center-wide surface water sampling was conducted within the Industrial Area and the results will be presented at a future meeting.

The briefing made note that a spill of the herbicide Hyvar® had been reported near Fire Station #1. FDEP noted that surfactants are also added as an ingredient to prepare herbicides for application and may not be called out in the herbicide ingredient list. AECOM's research

into this matter concluded that there was one herbicide additive that contains PFAS, but that additive was not used by KSC or Brevard County in herbicide applications.

The Team reached consensus to proceed with site assessment activities under SWMU #116, Fire Station #1 Area (formerly known as Fire Station #4; includes PRL #237 LOC 19); site assessment activities are under contract **(2109-D26).**

LOC 20 is Sewage Treatment Plant #1 and Sludge Disposal Area in the KSC Industrial Area. Soil and groundwater samples were not collected at the former spray field area as planned; sampling was deferred due to clearing being required. Phase I and II CS results from the treatment plant area determined that PFOA and PFOS concentrations in groundwater exceeded the pGCTLs. In soils, PFOA concentrations were below pSCTLs but PFOS concentrations were greater than pSCTL for leachability. PFOS concentrations in surface water were greater than the SWSL. The Team reached consensus to proceed with site assessment activities under SWMU #117, Sewage Treatment Plant #1 and Sludge Disposal Area (includes PRL #237 LOC 20 and PFAS impacts at SWMU #067 [POL Area, M6-0894]) **(2109-D27).**

LOC 21 is the former Sewage Treatment Plant #2 and Effluent Disposal Area in the former Hypergol Maintenance area. Planned surface water sampling was not presented; added here for completeness. PFOA and PFOS concentrations in groundwater were below the pGCTLs. PFOA and PFOS concentrations in soil were below pSCTLs. Phase II work plan included a surface water sample location near the effluent discharge. Sampling was deferred due to physical access constraints. A surface water sample will be collected during the Center-Wide surface water sampling event planned for October 2021. A surface water sample was collected ~800 feet north of this LOC from the adjacent borrow pit; the PFOA result was below and the PFOS result above the SWSL. NASA withdrew the no further action recommendation for this site pending the results of regional surface water sampling in its vicinity.

LOC 22 is the former Sewage Treatment Plant #2 and Percolation Pond at the Central Telemetry (TEL-4) facility. PFOA and PFOS concentrations in groundwater were below the pGCTLs. PFOA and

PFOS concentrations in soil were below pSCTLs. PFOS concentrations in both surface water samples were greater than its SWSL, and increased with proximity to the Banana River. Results are comparable to detections reported elsewhere in the Banana River. The groundwater and soil results indicate STP #2 is unlikely to be the source of PFAS detections in the Banana River. Surface water impacts will continue to be evaluated regionally to better understand the fate and transport of PFAS in groundwater and surface water. Team consensus was reached for no further action for LOC 22 **(2109-D28).**

FDEP sought clarification for LOCs/AOPCs adjacent to a surface water body where soil and groundwater samples were collected but not surface water samples; would surface water sampling be performed if soil and groundwater results were below provisional CTLs? NASA stated that it expects regional surface water sampling to fill in potential data gaps. Swales, ditches, and canals intersect with the lagoons and may be pathways for PFAS exchange with the lagoons. More investigation will be performed. NASA and FDEP both recognized there are potential sources of PFAS in the lagoon systems other than KSC, and acknowledged that there is currently only a small set of screening levels to guide an investigation.

LOC 23 is the former Sewage Treatment Plant #10 and Effluent Disposal Area within the boundary of SWMU #099 (Visitors Center Maintenance Area). PFOS and PFOA concentrations in groundwater were above the pGCTLs. PFOA and PFOS concentrations in soil were below pSCTLs. PFOS concentrations in surface water were below SWSL. Team consensus reached to proceed with site assessment activities under SWMU #099, Visitors Center Maintenance Area **(2109-D29).**

LOC 24 is former Sewage Treatment Plant #11 and Percolation Pond (SWMU #016) on S Band Road. PFOS concentrations in groundwater exceeded the pGCTLs. PFOA and PFOS concentrations in soil were below pSCTLs. PFOS concentrations in surface water was above the SWSL. Team consensus was reached to proceed with site assessment activities under SWMU #120, Former Treatment Plant #11 and Percolation Pond **(2109-D30).**

LOC 25 is former Sewage Treatment Plant #13 and Effluent Disposal Area on the southeast side of the Industrial Area. Groundwater results from one location were below PFOA and PFOS pGCTLs. Soil samples results were below pSCTLs. Phase III CS includes groundwater and soil sampling to further evaluate the effluent disposal pond area.

LOC 26 is former Sewage Treatment Plant #14 and Abandoned Treatment Pond. This location is currently part of SWMU #021 (Ransom Road Sandblast Yard), which is also PRL #237 LOC 31. Groundwater samples from 1 of 2 planned locations had PFOA and PFOS concentrations below the pGCTLs. A sample location within the pond was dropped due to standing water. The sample location at the former STP was shifted to the west to be representative of both site features. For soils, PFOA and PFOS concentrations were below pSCTLs for the one location sampled. Two sample locations within the pond were not collected due to standing water. The PFOS concentration in surface water was above the SWSL. Team consensus was reached for no further action for LOC 26 with further surface water assessment proceeding as part of LOC 31 **(2109-D31).**

LOC 27 is the Former Sewage Treatment Plant #16 and Abandoned Treatment Pond at the former badging facility on the west side of the Indian River . The surface water PFOS result was greater than the SWSL. Phase III CS recommendations include groundwater and soil sampling, which will help evaluate whether STP #16 is a source for the surface water PFOS.

FDEP inquired if there are other NASA surface water data for the Indian River. NASA confirmed there were three samples that came back under 10 ng/L. There is an action item to give FDEP the surface water sample results for the Indian River **(2109-A02).**

LOC 28 is the former Residuals Application Area near the former Central Instrumentation Facility. Phase I and II CS results determined that PFOA and PFOS in groundwater exceeded pGCTLs. Forensics indicate a likely AFFF source. PFOA and PFOS concentrations in soil were below pSCTLs.

Phase III CS groundwater sampling is currently underway.

LOC 29 is the former Residuals Application Area near the Operations and Checkout Facility. Phase I and II CS results determined PFOA and PFOS concentrations in groundwater were below pGCTLs. PFOA and PFOS concentrations in soils were below pSCTLs. Phase III CS recommendations include groundwater sampling, which is currently underway.

LOC 30 is KARS Park II. SWMU assessment activities were continued to determine the location of the reported AFFF spill there; a spill location could not be confirmed. One additional DPT groundwater sample location was added to Phase II to address FDEP's Phase 1 PFAS SWMU Assessment and Confirmatory Sampling Report review letter dated August 25, 2020. Phase I and II CS results determined that PFOA and PFOS concentrations in groundwater were above the pGCTLs. PFOA and PFOS concentrations in soils were below pSCTLs. PFOS concentrations were above the SWSL in surface water. Team consensus was reached to proceed with site assessment activities under SWMU #118, KARS Park II Area **(2109-D32).**

LOC 31 is Ransom Road Sandblast Yard (SWMU #021), a documented AFFF spill location. LOC 26 (Former STP #14) is at the southwest corner of LOC 31. SWMU assessment activities were continued to further investigate the location of the AFFF spill. No Phase II sampling was conducted in the Sandblast Yard, but two groundwater monitoring wells were sampled at adjacent SWMU #010 (GSA Reclamation Yard). PFOA exceeded pGCTL in one of those samples. Phase III CS includes groundwater, soil, surface water and sediment. The SWSL exceedance at LOC 26 will be addressed under LOC 31. The investigation will also help confirm whether the PFAS exceedance at SWMU #010 is associated with LOC 31. Phase III sampling is underway.

NASA added that site groundwater was previously closed out for SWMU #021 (Ransom Road Sandblast Yard), and wells at this location had been abandoned based on that. Soil land use controls remain in place.

LOC 32 is the location of Base Support Building (SWMU #014; formerly known as Maintenance & Operations Building). This location is a known AFFF spill location. The seven DPT

groundwater locations, the two sediment sample locations, and the two surface water sample locations were sampled during the Phase II CS. Phase I and II CS results determined PFOA and PFOS concentrations in groundwater were above the pGCTLs. In soils, PFOA was below pSCTLs; PFOS was above the leachability pSCTL. PFOS concentrations were above its SWSL in surface water. Team consensus was reached to proceed with site assessment activities under SWMU #014, Base Support Building (includes PRL #237 AOPC 12 and LOC 32) **(2109-D33).**

LOC 33 is Ransom Road Landfill (SWMU #003). SWMU assessment activities were continued to further investigate landfill construction and trenching. No Phase II sampling was performed. PFOA and PFOS concentrations in the Phase I groundwater samples exceeded the pGCTLs. No soil or surface water samples have been collected at this site to date.

Team consensus was reached to proceed with site assessment activities under SWMU #003, Ransom Road Landfill **(2109-D34).**

FDEP inquired about potential dewatering at leased facilities.

NASA responded that they have instituted LUCs at all the PFAS LOCs and AOPCs with PFAS data so that construction activities receive environmental review. In some cases, NASA has reached out to FDEP to coordinate and gain approval to percolate fluids back into site groundwater during construction projects. In one such case, former FDEP representative John Winters asked that a construction discharge area near the Mobil Station be identified as an AOPC, which was done. NASA is working to make sure the construction contractors are not discharging to surface water. FDEP expressed their appreciation for these efforts.

Results: Decision Items 2109-D14 through D34
Action Item 2109-A02

DAY 3

2109-M10 – Randy Sillan/AECOM

Mobile Launch Platform Rehabilitation (MLP) Sites and VAB Area Hot Spot #3 (SWMU 056), September 2021

Goal: The goal is to present 2021 direct push technology (DPT) groundwater sampling results from the Hot Spot 3 area and gain Team concurrence of the path forward. Field efforts summarized in the ADP include sampling for chlorinated volatile organic compound (CVOC) analysis. The objective of the ADP is to present current site conditions that support additional interim measures.

Discussion: Taking advantage of a lull in construction activities at the MLP, 188 DPT groundwater samples were collected at 62 locations and analyzed for CVOCs to evaluate current site conditions. A subset of samples was also analyzed for parameters useful in evaluating bioremediation. CVOC results confirm that the 2017 emulsified vegetable oil injections and bioaugmentation interim measure (IM) has decreased CVOC mass and shrunken the plume footprint. A small area with elevated trichloroethene (TCE) concentrations indicate a source is likely still present. The geochemical parameters indicate that aquifer conditions may be limiting enhanced reductive dechlorination. The recommended path forward is to utilize in situ chemical reduction (ISCR) by emplacing a product that enhances biotic and abiotic reduction of CVOCs for a long period (5 or more years), and maintains optimal conditions by limiting methanogenesis and managing sulfate reduction and sulfide accumulation. Preparation of an IM Work Plan is the next step.

FDEP requested clarification regarding the footprint and depths of the 2017 IM and conceptual treatment area for additional treatment. AECOM stated that concentrations above NADC are in similar locations now as prior to the 2017 IM, but the CVOC concentrations are lower compared to 2017. Since the groundwater flow is toward an Outstanding Florida Water, FDEP asked if a consideration had been given to expanding the existing air sparge system, which might be more quickly implemented since there is an infrastructure in place. NASA described the difficulties with accessibility and construction in the adjacent crawlerway and the highly compacted ground around the MLP. FDEP noted that the underground injection

control component of the proposed ISCR IM may require public notice.

The Team reached consensus to proceed with an IM Work Plan to implement ISCR to treat key CVOCs (TCE, cis-1,2-dichloroethene [cDCE], and VC) exceeding their respective NADC (TCE greater than 300 ug/L, cDCE greater than 700 ug/L, and VC greater than 100 ug/L) **(2109-D35).**

Results: Decision Item 2109-D35

2109-M11 Jennifer Joyal/AECOM

KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021

As a general note, NASA stated that the confirmation sampling that was performed or is planned at these AOPCs is for purposes of determining the presence or absence of PFAS. If there are detections, then the location will move into site assessment (SA) and at that time the extents of the PFAS will be determined. If media were not sampled prior, the SA is where that would get picked up.

Center-wide surface water sampling was conducted within the Industrial Area and other regional areas. The regional results will be presented at a future meeting.

AOPC 1 is the former Fire and Rescue Building at the Shuttle Landing Facility (SLF). It was used for emergency vehicle parking during landings, former fire pump testing, and former aqueous film-forming foam (AFFF) storage according to interviews. Phase III CS will include groundwater and soil sampling at this location. FDEP requested that a surface water sample be collected from the ditch by the AOPC on the east side of the landing strip. NASA inquired if a sample should also be collected for the swale north of Sharkey Road? FDEP concurred. The Phase III sampling results will be presented to the Team.

AOPC 2 is the former Contractor Support Building #7 north of the VAB area. According to interviews, this location was a former storage area for AFFF materials. A groundwater sample collected from this area during the Phase I CS revealed PFOA and PFOS

concentrations in groundwater exceeded Florida's provisional groundwater cleanup target level (pGCTL). Phase III CS includes groundwater and soil sampling in the direct area of the former facility.

The Team agreed to add a surface water sample immediately adjacent to the former Contractor Support Building #7. Team consensus reached to proceed with site assessment activities at AOPC 2 based upon the Phase I CS results. A SWMU name and number will be assigned **(2109-D36).**

AOPC 3 is the Orbiter Processing Facilities (OPF) 1 and 2. Aerosol cans of Scotchgard, a chemical containing PFAS, were utilized as part of the orbiter thermal protection system. Over 5,000 cans were used for each orbiter from approximately 1981-1986. Phase III CS includes groundwater and soil sampling and is underway.

FDEP inquired if the Team has PFAS results for investigative derived waste (IDW) from the AOPC 3 area? NASA stated that they have had detections of PFAS in IDW from this vicinity. As will be discussed for OPF 3, there were PFAS exceedances from monitoring wells.

Team consensus was reached to proceed with site assessment activities for AOPC 3 under SWMU #115, VAB North Area (includes PRL #237 Location of Concern [LOC] 5, AOPC 3, AOPC 4, and AOPC 10) **(2109-D37).**

AOPC 4 is OPF 3. This location was investigated for the potential use of Scotchgard™ on the orbiters. Interviews indicated Scotchgard™ and other PFAS-containing materials were not used at this facility. A shallow OPF 3 monitoring well, OPF-IW006S, was sampled in June 2021 and reported elevated detections of PFOS. The source of the PFAS is unknown; a forensics evaluation will be performed on the groundwater samples to be collected under AOPC 10, Crawlerway Residuals Disposal Area. The AOPC 10 boundary includes a portion of AOPC 4 and the area of monitoring well OPF-IW006S.

FDEP inquired if the footprint for AOPC 10 has now expanded to include AOPC 4? AECOM responded that both AOPC 4 and AOPC

10 will be investigated under the larger SWMU #115. Team consensus was reached to proceed with AOPC 4 site assessment activities under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10) **(2109-D38).**

AOPC 5 is the Thermal Protection Facility. This location was investigated for the potential use of Scotchgard™. Interviews indicated Scotchgard™ and other PFAS-containing materials were not used at this facility. A groundwater sample was collected in June 2021 from a shallow monitoring well located near the northeast corner of the facility from monitoring well WCPC-IW0013S. Results showed PFOA and PFOS concentrations were less than pGCTLs.

Team consensus was reached for no further action at this AOPC 5 **(2109-D39).** Note: Area is within the SWMU Boundary for SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10). The overall area will be further evaluated under SWMU #115.

AOPC 6 is the location of the current Logistics Facility (K6-1547). According to interviews, this facility was a former AFFF storage location and may have stored other PFAS-containing materials. No samples have been collected to date. Phase III CS includes groundwater, soil, surface water, and sediment sampling and is underway.

AOPC 7 is the location of the current Components Refurbishment and Chemical Analysis Facility (SWMU #041). The site was investigated for the potential use of PFAS-containing chemicals. The chemical database indicates potential PFAS precursors are utilized. The PFOS concentration in a groundwater monitoring well sample (CRCA-MW0003) exceeded the pGCTL. No soil or surface water samples have been collected to date at this location. Team consensus was reached to proceed with AOPC 7 site assessment activities under SWMU #041, Components Refurbishment and Chemical Analysis Facility **(2109-D40).**

AOPC 8 is the Central Supply Warehouse in the Industrial Area. Fire Station #1 (PFAS SWMU #116) is adjacent to the east and Sewage Treatment Plant #1 is on the block southeast of the

warehouse. According to interviews, this is a current and former storage area for AFFF materials. For groundwater, portions of the AOPC were previously investigated under PRL #237 LOC 19, and monitoring well sampling was conducted nearby at the Communications, Maintenance, and Storage Facility (SWMU #082). PFOA and PFOS concentrations in groundwater were less than pGCTLs in those samples. Additional groundwater samples will be collected during the Phase III CS.

This area is within the SWMU Boundary for SWMU #116, Fire Station #1 Area (formerly known as Fire Station #4; includes PRL #237 LOC 19). PFAS above the provisional groundwater cleanup target levels (pGCTL) have been confirmed at SWMU #116.

FDEP requested clarification on the distinction between AOPC 8 and SWMU #116. NASA explained there were groundwater exceedances associated with the fire station, and direct push technology step-out samples on the north side of the supply warehouse had results under provisional values. The SWMU #082 well that was sampled is to the west of the warehouse. The Phase II sampling is focused on the loading dock where it is believed PFAS-containing materials may have been located. The area to the south of the fire station and Central Supply Warehouse is being investigated under SWMU #117, Sewage Treatment Plant #1.

AOPC 9 is Weather Site 509, reportedly used for testing fire engine pumps. Phase III CS recommendations include groundwater, soil, and surface water sampling. Phase III CS sampling is underway.

AOPC 10 is the former Crawlerway Residuals Disposal Area. From the 1960s until 1986, the area north of the VAB was used for disposal of domestic waste residuals from STP #4 (LOC 5). Phase III CS includes groundwater and soil sampling, and sampling is underway. PFAS-affected groundwater is present within the AOPC boundary. A shallow OPF 3 monitoring well, OPF-IW006S, was sampled in June 2021 and reported elevated detections of PFOS. The source of the PFAS is unknown and a forensics evaluation will be performed on the groundwater samples to be collected under AOPC 10. This area is within the SWMU Boundary for SWMU #115. Team consensus was reached to proceed with AOPC 10 site

assessment activities under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10) **(2109-D41).**

AOPC 11 is the Bus Wash Station within KSC Visitors Center. This area was investigated due to the potential that PFAS-containing chemicals may have been used at the bus wash station. Phase III CS recommendations include groundwater sampling, which is currently underway. This area is within the SWMU boundary for SWMU #099, Visitor Complex Maintenance Area (includes PRL #237 LOC 23 and AOPC 11). Site Assessment activities at AOPC 11 will proceed under SWMU #099.

AOPC 12 is the Vehicle Wash Station at the former GSA Automotive Facility. This area was investigated due to the potential that PFAS-containing chemicals may have been used at the vehicle wash station. Phase III CS includes groundwater sampling and results will be presented at a future meeting; sampling is currently underway. This area is within the SWMU boundary for SWMU #014, Base Support Building Area (formerly known as M&O Building; includes PRL #237 LOC 32 and AOPC 12). PFOA and PFOS concentrations above the pGCTL are present in the groundwater in the vicinity of AOPC 12.

NASA stated that the elevated PFAS in this area and most likely will get wrapped up into SWMU #014. Team consensus was reached to proceed with AOPC 12 site assessment activities under SWMU #014, Base Support Building (includes PRL #237 AOPC 12 and LOC 32) **(2109-D42).**

AOPC 13 is the Q6 Radar Station (SWMU #113). Potential concerns were identified based on presence of PFAS in investigative derived waste (IDW). SWMU assessment activities were conducted and no PFAS sources were identified. Phase III CS recommendations include groundwater and surface water sampling and results will be presented at a future meeting; sampling is currently underway.

AOPC 14 is the Security Training Center on west Schwartz Road. This area was investigated based on a study showing this area had the highest concentrations of PFOA in KSC alligator blood samples. Records reviews and interviews did not confirm the use or storage of

potential PFAS containing chemicals or materials at the Training Center. Two Center-wide surface water samples were collected from the surface water bodies surrounding this facility and results were below SWSLs. FDEP inquired if anything else was located around the training center? NASA responded that it is isolated. Center-wide sampling is developing regional information for surface water, and more data will be collected. The Team reached consensus for no further action at AOPC14 **(2109-D43).**

AOPC 15 is the former Crawlerway Residuals Disposal Area near Saturn Causeway. From the 1960s until 1986, an area south of the Saturn Causeway west of Pad A was used for disposal of domestic waste residuals from STP #4 (LOC 5). Phase III CS recommendations include groundwater and soil sampling. Phase III CS results will be presented at a future meeting; sampling is underway.

AOPC 16 is KARS Park 1 (SWMU #084). SWMU assessment activities were conducted to identify PFAS sources due to elevated PFOS detections in surface water samples collected by Brevard County near KARS Park 1. No PFAS sources have been identified. Phase III CS recommendations include surface water sampling and results will be presented at a future meeting; sampling is currently underway.

AOPC 17 encompasses the Merritt Island National Wildlife Refuge Visitors Information Center Pump House (Abbreviated information was verbally conveyed during the presentation; additional information provided here for completeness.) Eleven non-potable water supply wells were sampled at KSC for the presence of PFAS in 2019. All analytes were below laboratory detection limits in five wells. A PFOS concentration of 10.55 ng/L was reported in the Pump House well. This non-potable well had the highest PFOS detection, so NASA designated it as an Area of Potential Concern to determine if PFAS containing chemicals were utilized or stored in the vicinity of this well. Forensics review indicate the source was likely not site-related; probably an artifact of well construction.

FDEP inquired if the source was Teflon™ casing in the wells, and NASA confirmed that to be the fact. NASA stated that the original wells installed at this location had Teflon casing. FDEP stated they

presume the construction materials for sampled wells are being recorded for this investigation A site may be revisited at a later date, and we want to be sure pertinent information is carried forward.

The Team reached consensus for No Further Action at AOPC 17 **(2109-D44).**

AOPC 18 is the Citgo Service Station. A manhole, located on the west side of the service station, was dewatered by a NASA contractor to complete tasks under their Safety & Reliability Upgrades contract. PFAS affected groundwater is present to the west and southwest of the manhole. A dewatering work plan was provided to FDEP for their concurrence, and the discharge area was designated an AOPC at FDEP's request based on their review. Phase III CS includes groundwater and soil sampling, and Phase III CS results will be presented at a future meeting; sampling is currently underway. This area is within the SWMU Boundary for SWMU #116, Fire Station #1 Area (formerly known as Fire Station #4; includes PRL #237 LOC 8 and LOC 19).

FDEP and NASA discussed dewatering activities in general. Dewatering manholes is a common practice. Where NASA is aware of PFAS, they disclose this information to the contractors for protection of both human health and the environment. NASA confirmed that the Remediation Program reviews environmental checklists in advance of construction activities that produce Records of Environmental Consideration (RECs) to provide necessary information to the construction projects.

AOPC 19 is the Contractor Support Building #6, located in the Roads and Grounds Facility (SWMU #073) immediately south of the Contractors Road Heavy Equipment Area (SWMU #055). Records reviews and interviews did not substantiate storage of AFFF or other potential PFAS source, including fluorinated pesticide products. FDEP asked about the level of certainty that no PFAS-containing materials had been stored or used at the Support Building. NASA replied that the Roads and Grounds personnel who use the facility have no recollection of any suspect materials being stored here. FDEP inquired surrounding facilities and whether there were PFAS investigations nearby. There is a PFAS assessment slated for the Contractors Road Heavy Equipment area, and if results lead the

investigation toward the Support Building the investigation will expand in that direction. Team consensus was reached for no further action at AOPC 19 **(2109-D45).**

Regional
Additional DPT groundwater samples and surface water samples were collected outside of these LOC or AOPC areas to evaluate extents of PFOA and PFOS affected groundwater and surface water. Notable findings include DPT0130 north of the OPF 3 (AOPC 4) and the Crawlerway, which had a PFOA and PFOS concentration of 5,160 ng/L at 25 ft below land surface. The source of PFAS-affected groundwater is unknown at this time. This result prompted NASA to investigate the use of aviation grade hydraulic fluid at KSC. Skydrol™, or similar hydraulic fluids, were not used per interviews and Material Safety Data Sheet search. Also noted was an area on the east side of the VAB (DPT0107) that has increasing PFOS and PFOA concentrations with depth. This area will be further evaluated under PRL #237. Now that we have seen PFAS increasing in depth at this location, we have incorporated deeper wells into the assessment program.

Results: Decision Items 2109-D36 through D45

2109-M12 Mark Jonnet/Tetra Tech

Converter Compressor Building (SWMU #089), DPT Update and Proposed Monitoring Wells, September 2021

Goal: The presentation goal is to provide the results of the direct push technology (DPT) sampling and consequent proposed monitoring well locations associated with February 2021 KSCRT Decisions 2102-D28, D30, D35, and D36, which are listed in the discussion below:

Discussion: DPT sampling was conducted in March 2021 at the areas of MWs 56, 96, and 133. DPT sampling was proposed the area of MW0114 but the area was flooded during the 2021 DPT event; therefore, sampling was postponed in that area.

In February 2021, the Team reached consensus to conduct DPT downgradient of MW056 to determine the extents of the LCP and

September 2021 Decision Items Rev 2		
Decision No.	**Minutes Reference**	**Decision**
2109-D08	2109-M06	**C-5 Electrical Substation (C5ES) (SWMU 066) Year 1 Performance Monitoring Results, September 2021:** The Team reached consensus to transition the site back into the VAB LTM program after the April 2022 event, and until the GCTLs are attained for two consecutive events at each sampling location.
2109-D09	2109-M07	**Components Cleaning Facility West (SWMU 030) Air Sparge System Status and Proposed Natural Attenuation Monitoring Path Forward, September 2021:** The Team reached consensus on the proposed NAM monitoring well network presented on Slides 40 and 43 of the ADP (proposed monitoring wells IW00A, IW00B, IW00C, IW00D, IW00E, IW00F, IW00G, IW00H, IW00I, IW00J, IW00K, IW00L, IW00M, IW00N, IW00O, IW00P, IW00Q, and existing monitoring wells IW0003ID, IW003IS, IW003S, IW0004IS, IW0004S, IW005ID, IW005IS, IW0011ID, IW0011IS, IW0012IS, IW0017S, IW0025IS, IW0017S, IW0025IS, IW0036, IW0041, IW0042, IW0046, IW0059, IW0060, IW0061, IW0062, IW0063, IW0064, IW0066, IW0067, and IW0068.
2109-D10	2109-M07	**Components Cleaning Facility West (SWMU 030) Air Sparge System Status and Proposed Natural Attenuation Monitoring Path Forward, September 2021:** The Team reached consensus to conduct the semi-annual sampling events in December 2021 (dry season) and June 2022 (wet season).
2109-D11	2109-M07	**Components Cleaning Facility West (SWMU 030) Air Sparge System Status and Proposed Natural Attenuation Monitoring Path Forward, September 2021:** The Team reached consensus to abandon the twelve (12) redundant groundwater monitoring wells listed on Slide 40 (IW0004S, IW0041, IW05S, IW05IS, IW05D, IW11D, IW12IS, IW12D, IW0026D, IW0060, IW0065, IW66).
2109-D12	2109-M08	**Components Cleaning Facility East (SWMU 030) High Concentration Plume Site Characterization, September 2021:** The Team reached consensus that the High Concentration Plume (HCP) is delineated horizontally and vertically.
2109-D13	2109-M08	**Components Cleaning Facility East (SWMU 030) High Concentration Plume Site Characterization, September 2021:** Team consensus was reached for the revised air sparging layout and performance monitoring plan.
2109-D14	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).
2109-D15	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with SA activities under SWMU #105, Former Fire Station #2 Area (includes PRL #237 LOC 3).

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Decision No.	**Minutes Reference**	**Decision**
2109-D16	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #106, Fire Station #3 Area (formerly known as Fire Station #6; includes PRL #237 LOC 4).
2109-D17	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with SA activities for LOC 5 under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10).
2109-D18	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** After the surface water sampling discussion for LOC 7, Team consensus was reached to collect one surface water sample at LOC 6 from the former percolation pond.
2109-D19	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to collect one surface water sample from the former percolation pond at LOC 7.
2109-D20	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #111, LC39 Observation Support Building Area (includes PRL #237 LOC 9).
2109-D21	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).
2109-D22	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities for LOC 14 under SWMU #119, Morpheus Test Area (included PRL #237 LOC 14 North).
2109-D23	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to add two surface water sampling locations. One sample location will be north of the former facility, and the other sample will be collected from the eastern swale along the SLF Runway.
2109-D24	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).
2109-D25	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with LOC 17 site assessment activities under SWMU #055, Contractors Road Heavy Equipment Area.

September 2021 Decision Items Rev 2		
Decision No.	**Minutes Reference**	**Decision**
2109-D26	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities under SWMU #116, Fire Station #1 Area (formerly known as Fire Station #4; includes PRL #237 LOC 19); site assessment activities are under contract.
2109-D27	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities under SWMU #117, Sewage Treatment Plant #1 and Sludge Disposal Area (includes PRL #237 LOC 20 and PFAS impacts at SWMU #067 [POL Area, M6-0894]).
2109-D28	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached for no further action for LOC 22.
2109-D29	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus reached to proceed with site assessment activities under SWMU #099, Visitors Center Maintenance Area.
2109-D30	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #120, Former Treatment Plant #11 and Percolation Pond.
2109-D31	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached for no further action for LOC 26 with further surface water assessment proceeding as part of LOC 31.
2109-D32	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #118, KARS Park II Area (2109-D33).
2109-D33	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #014, Base Support Building (includes PRL #237 AOPC 12 and LOC 32).
2109-D34	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021**: Team consensus was reached to proceed with site assessment activities under SWMU #003, Ransom Road Landfill.
2109-D35	2109-M10	**Mobile Launch Platform Rehabilitation (MLP) Sites and VAB Area Hot Spot #3 (SWMU 056), September 2021:** The Team reached consensus to proceed with an IM Work Plan to implement ISCR to treat key CVOCs (TCE, cDCE, and VC) exceeding their respective NADC (TCE greater than 300 ug/L, cDCE greater than 700 ug/L, and VC greater than 100 ug/L).
2109-D36	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus reached to proceed with site assessment activities at AOPC 2 based upon the Phase I CS results. A SWMU name and number will be assigned.

September 2021 Decision Items Rev 2		
Decision No.	**Minutes Reference**	**Decision**
2109-D37	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached to proceed with AOPC 3 site assessment activities under SWMU #115, VAB North Area (includes PRL #237 Location of Concern [LOC] 5, AOPC 3, AOPC 4, and AOPC 10).
2109-D38	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached to proceed with site assessment activities for AOPC 4 under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10).
2109-D39	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached for no further action at this AOPC 5.
2109-D40	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached to proceed with AOPC 7 site assessment activities under SWMU #041, Components Refurbishment and Chemical Analysis Facility.
2109-D41	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached to proceed with AOPC 10 site assessment activities under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10).
2109-D42	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached to proceed with AOPC 12 site assessment activities under SWMU #014, Base Support Building (includes PRL #237 AOPC 12 and LOC 32).
2109-D43	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** The Team reached consensus for no further action at AOPC14.
2109-D44	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** The Team reached consensus for No Further Action at AOPC 17.
2109-D45	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus was reached for no further action at AOPC 19.
2109-D46	2109-M12	**Converter Compressor Building (SWMU #089), DPT Update and Proposed Monitoring Wells, September 2021:** The Team reached consensus to install a downgradient monitoring well screened 40-50 ft bls south of MW056 to delineate the low concentration plume (LCP).
2109-D47	2109-M12	**Converter Compressor Building (SWMU #089), DPT Update and Proposed Monitoring Wells, September 2021:** Team consensus was reached for a new side gradient monitoring well co-located with DPT462 (north of MW133) screened from 20 to 30 ft bls.
2109-D48	2109-M12	**Converter Compressor Building (SWMU #089), DPT Update and Proposed Monitoring Wells, September 2021:** The Team reached consensus that monitoring well MW096 is compromised and should be abandoned properly. A well screened 60-70' bls will be installed, to be sampled in December 2021.
2109-D49	2109-M13	**Fluid Servicing Road Area Sites, September 2021:** The Team reached consensus on the 2021-2022 Sampling Plan to include biennial sampling event of 8 annual wells (MW0005, MW0015, MW0019, MW0031, MW0034, MW0035, MW0036, MW0037) and 14 additional biennial wells (MW0006, MW0007, MW0009, MW0010, MW0012, MW0014, MW0020, MW0024, MW0025, MW0026, MW0027, MW0028, MW0029, MW0030) to be sampled in December 2021 for TCE, cDCE, tDCE and VC; collecting depth to water measurements from 37 site-wide monitoring wells; conducting the 5-year plume monitoring DPT event in 2022; and installing potential new wells depending on DPT results. Recommendations from the sampling will be brought back to Team.

Revision 1 Meeting Minutes for January 11, 2022

Attendees:

1. Bruce Moore/FDEP
2. Mike Deliz/NASA
3. Ryan O'Meara/NASA
4. Deda Johansen/NASA
5. Anne Chrest/NASA
6. Natasha Darre/NASA
7. Michelle Moore/NEMCON
8. Mark Speranza/Tetra Tech
9. Chris Hook/Tetra Tech
10. Alex Murphy/Tetra Tech
11. Mark Jonnet/Tetra Tech
12. Jennifer Joyal/AECOM
13. Linnea King Clark/AECOM
14. Matthew Zenker/AECOM
15. Brittany Follet/AECOM
16. Richard Smith/HGL

2201-M01 Michelle Moore/NEMCON

Meeting Minutes and Miscellaneous Items

Team consensus was reached on January 6, 2022 (via email to all members of the Kennedy Space Center Remediation Team [KSCRT]), that Revision 1 of the meeting minutes and action/decision items for the November 2021 Team meeting would become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date. The minutes were finalized and sent by email to all parties on January 6, 2022.

Open action items were reviewed by the Team. The following action item was closed out:

Wilson Corners (Solid Waste Management Unit [SWMU] 001) High Concentration Plume (HCP) Site Characterization and Revised Air Sparge (AS) System Layout, September 2021: NASA will send historic groundwater sampling data to the Florida Department of Environmental Protection (FDEP).

This data was provided by the National Aeronautics and Space Administration (NASA) to FDEP on November 9, 2021, during the last KSCRT meeting **(Closed 2109-A01).**

General Services Administration Reclamation Yard (GSRY) SWMU 010, May/June Groundwater Monitoring Results September 2021: NASA requested the pre-Interim Measure Underground Injection Control (UIC) sample results be added to the applicable figure and

2201-M04 Jennifer Joyal/AECOM

Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022

Goal: The purpose of the ADP is to summarize Phase III site assessment activities and results.

Discussion:

The Center-Wide Phase I Solid Waste Management Unit (SWMU) Assessment of per- and polyfluoroalkyl substances (PFAS) was completed in 2018-2019. At that time, 33 Locations of Concern (LOCs) were identified and Confirmatory Sampling (CS) of groundwater (GW) and surface water (SW) only were completed. KSC was divided into three different regions for the purpose of future discussions (northern, central, and southern).

Results presented from the Phase I investigation led to a recommendation of No Further Action (NFA) for one LOC, and CS activities for the remaining 32 LOCs. NFA was recommended for LOC 15, the Remote Launch Vehicle Area.

Center-wide Phase II SWMU Assessment and CS of PFAS was completed in 2020-2021 with the continued assessment of 30 LOCs (assessment of the other two LOCs is continuing under another project). Phase II addressed data gaps, and focused on identifying other PFAS sources. Surface water and sediment sampling were conducted within watersheds spread throughout KSC; direct push technology (DPT) GW and soil sampling were conducted within selected LOCs; and additional DPT sampling was completed in areas to the east and south to determine if a PFAS contamination plume is present near the KSC secure boundary. These data were used to identify Areas of Potential Concern (AOPCs), LOCs where NFA was warranted, LOCs where additional CS was warranted, and LOCs where proceeding to Site Assessment (SA) was warranted. Data collected during PRedictive Integrated Stratigraphic Modeling (PRISM™) were used to make additional observations. Results were presented in the Center-Wide PFAS PRL #237 Phase II Solid Waste Management Unit Assessment and Confirmatory Sampling Report Summary presented to the KSC Remediation Team (KSCRT) in September 2021 with additional CS recommended for selected LOCs and AOPCs.

Three LOCs and four AOPCs were approved for No Further Action following the Phase I/Phase II Assessment and CS. They are LOC #15 (Remote Launch Vehicle Area), LOC #22 Former Sewage Treatment Plant (STP) #3 and Percolation Pond, LOC #26 Former STP #14 and Abandoned Treatment Pond, AOPC #5 Thermal Protection Facility, AOPC #14: Security Training Center, AOPC #17: Merritt Island National Wildlife Refuge Visitors Information Center Pump House, and AOPC #19 Contractor Support Building #6. Note that LOC 16 - Hydrocarbon Burn Facility (HBF) and LOC 18 - Schwartz Road Landfill (SRLF) are being evaluated by Tetra Tech and not covered in this ADP.

Fifteen LOCs and six AOPCs proceeded to site assessment following the Phase I/ Phase II SWMU Assessment and CS. Phase III CS included sampling at 14 LOCs, 11 AOPCs, and 14 monitoring wells outside AOPCs and LOCs.

For those locations for which no further action (NFA) is recommended in this presentation, a Site Rehabilitation Completion Order (SRCO) will not be requested. The intent of an NFA recommendation is that the Team just will not be pursuing any additional assessment at that particular location.

LOC #13 is the location of the Former Sewage Treatment Plant #18. CS activities included four groundwater samples (different intervals) collected from one DPT location in the apparent location of the former facility. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) concentrations were below Florida's provisional Groundwater Cleanup Target Levels (pGCTLs) in all sampled intervals. In Phase I/II, a soil sample from that location had no detections of PFAS.

FDEP inquired if there was any surface water nearby this location. AECOM confirmed no surface water was nearby. A ditch runs along Beach Road, but NASA confirmed this ditch is not co-located with the area that we are concerned with.

The Team reached consensus for No Further Action (NFA) at LOC #13, Former Sewage Treatment Plant #18 **(2201-D02).**

AOPC #1 is the location of the Former Shuttle Landing Facility (SLF) Fire and Rescue Vehicle Building. Activities included 16 groundwater samples collected at four DPT locations. Concentrations were above pGCTLs in all DPT locations, with the maximum concentrations in PFAS-DPT0217 at 8 ft bls. Six soil samples were collected from three soil boring locations. PFOA

concentrations were below provisional Soil Cleanup Target Levels (pSCTLs) in all samples and depths. PFOS concentration were above pSCTLs in all samples and depths, with the maximum PFOS concentration at SB0100 (0-0.5 ft bls). Two surface water samples were collected from this area, as requested by FDEP in the September 2021 KSCRT meeting. PFOA concentrations were below Florida's surface water screening levels (SWSLs) and PFOS concentrations were above SWSLs in both locations.

FDEP inquired if this location is proximal to the Space Florida activities that are taking place for the satellite manufacturing location. NASA stated this is north of that location currently, by approximately 1.5 miles. Construction is approximately 6,500 ft away. The reality is that some construction could migrate in this direction. In addition, the utility corridor work is extending up to Sharkey Road. However, it is far east of this location.

NASA has shared PFAS sampling results and DPT concentrations with Space Florida so they can work together on the dewatering and make sure we are on the same page. Their contractor also has experience with this contaminant and are trying to avoid dewatering if at all possible. We will discuss further in the future once they come up with their construction plan.

The Team reached consensus that AOPC #1 -Former SLF Fire and Rescue Vehicle Building (J5-1299) will move to SWMU Assessment **(2201-D03).**

AOPC #2 is the location of Contractor Support Building #7. Eight groundwater samples were collected from two DPT locations. Concentrations were below pGCTLs in all intervals for DPT0222. Maximum concentrations in PFAS-DPT0221 at 23 ft bls were PFOA+PFOS 512.2 ng/L. Four soil samples were collected from two soil boring locations. PFOA and PFOS concentrations were below pSCTLs in both depth intervals in both locations. Two surface water samples were collected with PFOS concentrations above SWSL in both locations.

The Team reached consensus that AOPC #2 -Contractor Support Building #7 will move to SWMU Assessment activities **(2201-D04).**

LOC #5 is the location of the Former STP #4 and Sludge Disposal Area. Concentrations at this location in groundwater and surface water samples were above pGCTLs and SWSLs. The site will be advancing to SWMU Assessment under SWMU #115 (Northern VAB), which is currently underway.

FDEP inquired where we are with the work plan for SWMU #115?

NASA inquired if it is FDEP's expectation to get formal work plans for these locations? NASA wanted to get these investigations moving, but can retroactively submit work plans if needed. The intent is to bringing data to FDEP incrementally. The most important thing was to start and work is following a 62-780 approach.

FDEP stated by going this route, you run the risk of the State arriving at an endpoint different than what you assume it is now. As an example, what if the GCTL ultimately was 30 ng/L instead of 70 ng/L? NASA responded that they are just trying to get a big picture view using a 70 ng/L line and see what kind of regulations come along. Either the data will be good or will require fine-tuning. NASA recognizes that this will not likely be a final delineation. NASA believes this is what the agency will do as a whole. Proximity to surface water bodies is an additional consideration. FDEP welcomes the information gathering, but cautioned that the regulatory pathway hasn't been established.

AOPC #3 is the location of the OPF 1 and 2. Sixteen groundwater samples were collected from four DPT locations. Concentrations were below pGCTLs in three locations. Maximum concentration of PFOA+PFOS at PFAS-DPT0258 was 261.8 ng/L. Eight soil samples were collected from four soil borings with no$ perfluorooctanesulfonamide (PFOSA) detected in the samples. (PFOSA was a key ingredient in Scotchguard™, which is known to have been used at the OPFs in the past.) PFOA and PFOS concentrations below the pSCTLS for all locations and depth intervals. AOPC #3 will be assessed under SWMU #115 (northern VAB), which is currently underway. Concrete samples will be collected during SWMU Assessment activities.

AOPC #10 is the location of the Crawlerway Residuals Disposal Area. Sixteen groundwater samples were collected from four DPT locations. Concentration were below pGCTLs in three locations, but the pGCTL was exceeded at PFAS-DPT0229 (8 ft bls) with the result of PFOA+PFOS of 100.2 ng/L. No PFOSA was detected in select samples. AOPC #10 will be assessed under SWMU #115 (northern VAB), which is currently underway.

LOC #1 is the location of the Flight Crew Rescue Training Area (FCRTA). Eight groundwater samples were collected from two DPT locations; both locations contained exceedances of pGCTLs. Four soil samples were collected from two soil boring locations. PFOA

and PFOS concentrations were below pSCTLs in both depth intervals at both locations. The Team reached consensus that LOC #1 (FCRTA) will move to SWMU Assessment activities **(2201-D05).**

FDEP asked about the additional surface water samples that were to be collected at this location. NASA stated the samples were obtained with a boat, and regional surface water information will be presented to FDEP. They have also since learned when the fire trucks were parked out here their trucks sometimes leaked and they will sample at those locations. Mike Deliz will send to Anne Chrest where the fire trucks parked north of LOC #1 for launches.

LOC #8 is the location of the Former STP #7 site. Three groundwater samples were collected from one DPT location. PFOS and PFOA concentrations were below pGCTLs in each depth interval for this location. Two soil samples were collected from one soil boring location (SB0113). PFOA and PFOS concentrations were below pSCTLs in both depth intervals.

The Team reached consensus that LOC #8 – Former STP #7, will move to SWMU Assessment activities **(2201-D06).**

LOC #10 is the location of the Former STP #9 and Abandoned Treatment Pond. Four groundwater samples were collected from one DPT location. Concentrations were below pGCTLs in all depth intervals. Eight soil samples were collected from four soil boring locations. Concentrations were below pSCTLs in both depth intervals.

The Team reached consensus for No Further Action at LOC #10 – Former STP #9 and Abandoned Treatment Pond. PFAS at the Components Cleaning Facility (CCF) will be further investigated under existing SWMU #030 (CCF) **(2201-D07).**

LOC #11 is the location of Former STP #12 and percolation pond. Eight groundwater samples were collected from two DPT locations. PFOS and PFOA concentrations were below pGCTLs in all depth intervals for both locations. The Team reached consensus for No Further Action at LOC #11 – Former STP #2 and percolation pond **(2201-D08).**

LOC #6 is the location of the Former STP #5 and percolation pond at Launch Complex (LC) 39A. Seven groundwater samples were collected from two DPT locations. PFOS and PFOA concentrations exceeded the pGCTL in one location at DPT 0257 (PFOA + PFOS = 123.4 ng/l). Four soil samples were also collected from two soil

boring locations; concentrations were below pSCTLs in both intervals for PFOA and PFOS. A surface water sample was collected from within the pond at the request of FDEP (September 2021 KSCRT meeting). PFOA concentration was below SWSL and PFOS results were 44.9 ng/L. The Team reached consensus for LOC #6 – Former STP #5 and percolation pond to be further investigated under existing SWMU #008 (LC 39A) **(2201-D09).**

LOC #7 is the location of the Former STP #6 and percolation pond at LC 39B. NFA had previously been requested for this LOC on the basis of groundwater and soil results, but FDEP recommended surface water samples. Surface water samples were collected from within the pond in Phase III. PFOA concentration was below SWSL and PFOS results were 20.5 ng/l.

The Team reached consensus for No Further Action at LOC #7 – Former STP #6 and percolation pond. PFAS is being further investigated under existing SWMU #009 (LC 39B) **(2201-D10).**

AOPC #15 is the location of the Crawlerway Residuals Disposal Area Saturn Causeway Site. Eight groundwater samples were collected from two DPT locations. PFOA and PFOS concentrations were below pGCTLs for all depth intervals in both samples. FDEP requested clarification if only groundwater was sampled at this location. AECOM confirmed only groundwater was sampled at this AOPC; there had been no earlier sampling during Phases I and II.

The Team reached consensus for No Further Action at AOPC #15 – Crawlerway Residuals Disposal Area Saturn Causeway **(2201-D11).**

AOPC #6 is the location of the Logistics Building. Twelve groundwater samples were collected from three DPT locations. PFOA and PFOS concentrations were below pGCTLs at two of the three locations. Maximum concentration of PFOA + PFOS (161.8 ng/l) was identified at PFAS-DPT0248 at 8 ft bls.

The Team reached consensus that AOPC #6 – Logistics Facility will move to SWMU Assessment activities **(2201-D12).**

AOPC #9 is the location of Weather Site 509, where fire truck pumps were reportedly tested. Three groundwater samples were collected from one DPT location and identified exceedances at two intervals. Two soil samples were collected from one soil boring location. Concentrations at the shallow interval were below pSCTLs. PFOA did not exceed pSCTL in the deeper interval. The PFOS result was 0.0076 mg/kg at the deeper interval, which is above the

leachability pSCTL. One surface water sample was collected with the results of PFOA below SWSL and PFOS at 31.9 ng/l.

The Team reached consensus that AOPC #9 – Weather Site #509 will move to SWMU Assessment activities **(2201-D13).**

DPT locations outside of LOC and AOPC boundaries consisted of 20 groundwater samples from five DPT locations. These samples were intended to help identify potential sources for prior pGCTL exceedances with no clear source. Maximum PFOS concentrations were identified in PFAS-DPT0252 (east of the VAB) and PFAS-DPT0255 (east of the Flight Crew Rescue Training Area).

The Team reached consensus that DPT 0252 and DPT0255 will be incorporated into SWMU boundaries for nearby sites and will advance to SWMU Assessment activities **(2201-D14).**

LOC #28 is the location of the Central Instrumentation Facility former residuals application area. Four groundwater samples were collected from one DPT location. Maximum concentrations at 8 ft bls were PFOA + PFOS at 165.6 ng/l. One surface water sample was collected north of this LOC. PFOA concentrations were below SWSL, and PFOS result was 108 ng/l.

The Team reached consensus that LOC #28 – Central Instrumentation Facility Former Residuals Application Area will move to SWMU Assessment activities **(2201-D15).**

LOC #29 is the location of the Operations and Checkout Former Residuals Application Area. Four groundwater samples were collected from one DPT location. PFOA and PFOS were below pGCTLs in all sampled intervals.

The Team reached consensus for No Further Action at LOC #29 – O&C Former Residuals Application Area **(2201-D16).**

AOPC #8 is the location of the Central Supply Warehouse. Four groundwater samples were collected from one DPT location. PFOA and PFOS were below pGCTLs in all sampled intervals. Two soil samples were collected from one soil boring location. Concentrations were below pSCTLs in both intervals.

NASA stated that the red boundary (PFAS LOC) in the figure on slide 90 is for the fire station, and not for Central Supply. We can get you the figures we are investigating. We will put that together and get it to you **(2201-A01).**

The Team reached consensus for No Further Action at AOPC #8 – Central Supply Warehouse **(2201-D17).**

AOPC #12 is the location of the Vehicle Wash Station at the Former General Services Administration (GSA) Automotive Facility. Four groundwater samples were collected from one DPT location. Maximum concentrations of PFOA + PFOS are located at the 43 ft bls interval at 5,327 ng/l. Site assessment activities at this location are already underway under SWMU #014 (Base Support Building), which encompasses this area.

AOPC #18 is the location of the Dewatering at Mobil Service Station site. Four groundwater samples were collected from one DPT location. PFOA and PFOS were below pGCTLs for all depth intervals. Two soil samples were collected from SB0125. Concentrations were below pSCTLs.

FDEP inquired if any existing monitoring wells around this location were sampled as part of this investigation. NASA stated they were only looking at the dewatering area, and it was a concern due to the proximity to the fire station. FDEP approval for dewatering as long as we sampled afterward to confirm no migration. There are no monitoring wells in the vicinity of where the discharge took place. Monitoring well MW0012 is the closest and located underneath the service station canopy. Total PFAS at this monitoring well at last sample was 19 ng/L. Total PFAS at the monitoring well located at the intersection of the two roads close by was 16.2 ng/L. Another monitoring well MW0029 located across the road has a result of 16.5 ng/L.

The Team reached consensus for No Further Action at AOPC #18 – Dewatering at Mobil Service Station **(2201-D18).**

LOC #27 is the location of the STP #16 and Abandoned Treatment Pond on the west side of the Indian River Bridge. Four groundwater samples were collected from one DPT location. PFOA and PFOS were below pGCTLs for all depth intervals. Eight soil samples were collected from four soil borings. Concentrations were below pSCTLs in all samples and depth intervals.

FDEP inquired how the Team is incorporating the exceedance of the SWSL in a Phase 1?ii surface water sample from this site? NASA responded that they are noting the exceedance and waiting as the State develops additional guidance on PFAS in surface water. The surface water result seems unlikely to be related to the former STP based on the soil and groundwater results.

The Team reached consensus for No Further Action at LOC #27 – STP #16 and Abandoned Treatment Pond **(2201-D19).**

LOC #31 is the location of the Ransom Road Sandblast Yard (RRSY), which had a small, reported spill of aqueous film-forming foam in 2008. Twelve groundwater samples were collected from three DPT locations. PFOA and PFOS were below pGCTLs for all locations and depth intervals. Six soil samples were collected from three boring locations. Concentrations were below pSCTLs in all samples and depth intervals. Surface water samples were collected in four locations around this LOC. PFOA concentrations were below SWSL in all surface water samples collected. Maximum PFOS concentration above the SWSL at PFAS-SW0136 with a concentration of 76.6 ng/l. That location is at the southwest side of the GSA Reclamation Yard (SWMU #10), which is immediately west of the RRSY. Three sediment samples were collected and co-located with the surface water samples taken. Maximum PFOA and PFOS concentrations were located in PFAS-SD0088.

FDEP inquired if that surface water exceedance falls within SWMU #10 boundary. NASA stated they have to update the SWMU boundary to the south to cover this area.

The Team reached consensus for No Further Action at LOC #31 – RRSY. PFAS at GSA Reclamation Yard (GSRY) to be further investigated under existing SWMU #010 (GSRY) **(2201-D20).**

LOC #26 is the location of the Former STP #14 and Abandoned Treatment Pond. While NFA had previously been approved, surface water samples were collected from within the pond as requested by FDEP at the September 2021 KSCRT meeting. PFOA concentrations were below SWSL; PFOS concentrations were 23.2 ng/l.

The Team reached consensus for No Further Action at LOC #26 – Former STP #14 and Abandoned Treatment Pond. PFAS at GSA Reclamation Yard (GSRY) to be further investigated under existing SWMU #010 (GSRY) **(2201-D21).**

LOC #21 is the location of the Former STP #2 and Effluent Disposal Area in the far southwest of the Industrial Area. One surface water sample was collected from this area. PFOA concentrations were below SWSL; PFOS concentrations were 13 ng/l. One sediment sample was collected from this area as well. PFOA and PFOS concentrations were less than 0.00032 mg/kg.

FDEP inquired what will be done with the surface water sample result? NASA doesn't believe the STP is associated with the

exceedance. The location will remain as part of the center-wide surface water investigation. FDEP asked if there are any plans for resampling going forward for orphan sites? NASA stated they will keep this holistic view of the center and these "orphan" locations. When the State releases surface water CTLs the path forward will be clearer.

The Team reached consensus for No Further Action at LOC #21 – Former STP #2 and Effluent Disposal Area **(2201-D22).**

LOC #25 is the location of the Former STP #13 and Effluent Disposal Area also in the far southwest of the Industrial Area. Eight groundwater samples were collected from two DPT locations. Concentrations within all intervals at one location were below pGCTLs. Maximum concentrations within PFAS-DPT0240 at 23 ft bls were PFOA + PFOS at 76.8 ng/l. Four soil samples were collected from two soil boring locations. Concentrations were below pSCTLs in all samples and depth intervals. One surface water sample was collected at LOC #25. Results were below the SWSLs.

The Team reached consensus that LOC #25 – Former STP #13 and Effluent Disposal Area will move to SWMU Assessment activities **(2201-D23).**

AOPC #16 is the location of KARS Park I. Three surface water samples were collected. PFOA concentrations were below SWSL; maximum PFOS concentrations were located in SW0108 at 46.6 ng/l.

FDEP inquired what is the interpretation of the results of SW108? SW108 was collected northeast of the ballfields from an east-west ditch. NASA noted to the west there is a subdivision, and also the river can come up into this area when it is high because it is tidally connected. Sometimes this ditch is dry. FDEP inquired if the other locations sampled that came in lower were also tidally connected to the river. NASA confirmed they were; SW106 and SW107 were collected from the east-west ditch that is north of Hall Road. All the samples were collected that same day. There is no industrial activity at this site, the most intense use is camping and launching boats. FDEP stated that it would make sense to go back and collect another sample. NASA agreed they could take another sample at SW108 and samples to the east and to the west. That may help identify the source of the PFAS. NASA will update the summary table for KARS Park I and email back out to the Team **(2201-A02).**

The Team reached consensus for additional SWMU Assessment at AOPC #16 – KARS Park I **(2201-D24).**

AOPC #13 is the location of the Q6 Radar Station. Two monitoring wells were sampled at Q6 Radar Station following detection of PFAS in an investigative derived waste (IDW) sample. The results for the shallower well (MW0003) were below the pGCTLs. PFOA + PFOS at MW0001 was 296 ng/l. One surface water was collected from this area. PFOA and PFOS concentrations were below SWSLs. FDEP inquired about other investigations at the site. NASA owes FDEP an update on Q6 Radar Station (SWMU #112), so they will put together an ADP to review the RFI we completed **(2201-A03).**

The Team reached consensus that additional SWMU Assessment activities for AOPC #13 – Q6 Radar Station will be conducted to determine the source **(2201-D25).**

Monitoring wells SAEE-MW0002 (west of the Base Support Building) and A3RB-MW003 (near the South Repeater Building) were sampled. This was done because of prior results indicating the potential for PFAS impacts. Results were PFOA + PFOS at 1,122 ng/l and 1,763 ng/l at the two locations. Four groundwater samples were also taken from one DPT location outside of any PFAS LOC or AOPC; in this case at the South Repeater Building. The maximums concentrations of PFOA were below pGCTLs. PFOS results were PFOS was 252 ng/l.

FDEP inquired whether the PFAS is suspected to be related to the electrical equipment? NASA replied the source for SAEE-MW0002 is strongly suspected to be the Base Support Building, where there are high groundwater results for PFAS. The South Repeater Building is not co-located with the SAEE location. Confirmatory sampling was conducted under the site name of Area 3 Repeater Building (A3RB) and a soil interim measure was completed. After discovering PFAS in IDW and then groundwater at that site, the Fire Chief was contacted. He reported that during a wildfire, AFFF was applied here to protect the asset. The site closure request that was pending under the site name of A3RB is being withdrawn because of the discovery of PFAS. A PFAS site assessment is a high priority at the South Repeater Building/A3RB because it is near KSC's boundary.

FDEP asked how this information gets put into the conceptual site model. AECOM stated it has not been incorporated yet.

The Team reached consensus that the PFAS assessment at the South Repeater Building (formerly known as Area 3 Repeater Building) will be investigated under SWMU #122 South Repeater Building **(2201-D26).**

NASA noted that because there are so many PFAS sites, further assessment is being prioritized. We will first fund the highest concentrations (sites with groundwater results currently over 1,000 ng/L are under contract), and the others will be addressed as we have funding available. NASA believes there are 39 sites that require additional assessments.

Results: Decision Items 2201-D02 through D26
Action Items 2201-A01 through A03

2201-M05 Mark Jonnet/ Tetra Tech

<u>Launch Complex 39A Operations Support Building Area (AOSB) SWMU #111 Construction Completion, January 2022</u>

Goal: The purpose is to summarize site history along with an overview of the Interim Measure Work Plan, air sparge system installation activities timeline, lessons learned, and path forward.

Discussion:
The ADP provided a brief summary of AOSB's history as well as the plume delineation (per KSCRT Decision 1806-D05), the Interim Measure Work Plan (IMWP) that was approved by FDEP May 2021, and activities associated with the air sparge system installation, startup, and first quarter operations and monitoring. The area of groundwater contaminated by trichloroethene (TCE), cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC) above Florida's groundwater cleanup target levels (GCTLs) is the target of the IM. Cleanup to GCTLs is the objective of the IM in order to protect the adjacent Outstanding Florida Water (OFW).

Field activities associated with installation began February 9, 2021 and concluded June 2, 2021. System startup began June 8, 2021 and full-scale operations began July 12, 2021. Baseline sampling was conducted in May 2021 and first quarter sampling was conducted in October 2021.

January 2022 Decision Items Rev 1		Decision
Decision No.	Minutes Reference	
2201-D01	2201-M03	**Hypergol Maintenance Facility North(HMFN) (SWMU #090) Performance Monitoring Report, January 2022:** The Team reached consensus to continue operation, maintenance and monitoring (OM&M) of the AS IM, which includes: maintenance and operation of the AS system; discontinuation of the AS system operation at Zone 1 comprising 17 ASWs screened from 25-27 feet bls in the western portion of the AS network; removal of monitoring wells MW0035 and MW0036 from performance sampling (based on two consecutive rounds of sampling results below GCTLs); reduction in the performance sampling schedule frequency of MW0046 and MW0047 to annually (based on the two consecutive rounds of sampling results below GCTLs), continuing this annual sampling to monitor the observed groundwater flow direction reversal away from the borrow lake toward these two wells; sampling remaining wells semi-annually in accordance with October 2017 Interim Measure Work Plan (IMWP); and the completion of one annual round of ambient air sampling. Monitoring wells and their respective groundwater monitoring schedule for Year 2 is provided on Slide 63 of the ADP. These include monitoring wells MW0002, MW0004, MW0008, MW0009, MW0011, MW0016, MW0024, MW0027, MW0028, MW0029, MW0030, MW0031, MW0032, MW0033, MW0034, MW0037, MW0038, MW0039, MW0040, MW0041, MW0042, MW0043, MW0044, MW0045, MW0046, and MW0047.
2201-D02	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action (NFA) at LOC #13, Former Sewage Treatment Plant #18.
2201-D03	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that AOPC #1 -Former SLF Fire and Rescue Vehicle Building (J5-1299) will move to SWMU Assessment.
2201-D04	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that AOPC #2 -Contractor Support Building #7 will move to SWMU Assessment activities.
2201-D05	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that LOC #1 (FCRTA) will move to SWMU Assessment activities.
2201-D06	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that LOC #8 – Former STP #7, will move to SWMU Assessment activities.
2201-D07	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #10 – Former STP #9 and Abandoned Treatment Pond. PFAS at the Components Cleaning Facility (CCF) will be further investigated under existing SWMU #030 (CCF).
2201-D08	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #11 – Former STP #2 and percolation pond.

January 2022 Decision Items Rev 1		Decision
Decision No.	Minutes Reference	
2201-D09	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for LOC #6 – Former STP #5 and percolation pond to be further investigated under existing SWMU #008 (LC 39A).
2201-D10	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #7 – Former STP #6 and percolation pond. PFAS is being further investigated under existing SWMU #009 (LC 39B).
2201-D11	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at AOPC #15 – Crawlerway Residuals Disposal Area Saturn Causeway.
2201-D12	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that AOPC #6 – Logistics Facility will move to SWMU Assessment activities.
2201-D13	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that AOPC #9 – Weather Site #509 will move to SWMU Assessment activities.
2201-D14	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that DPT 0252 and DPT0255 will be incorporated into SWMU boundaries for nearby sites and will advance to SWMU Assessment activities.
2201-D15	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that LOC #28 – Central Instrumentation Facility Former Residuals Application Area will move to SWMU Assessment activities.
2201-D16	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #29 – O&C Former Residuals Application Area.
2201-D17	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at AOPC #8 – Central Supply Warehouse.
2201-D18	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at AOPC #18 – Dewatering at Mobil Service Station.
2201-D19	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #27 – STP #16 and Abandoned Treatment Pond.

January 2022 Decision Items Rev 1		Decision
Decision No.	Minutes Reference	
2201-D20	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #31 – RRSY. PFAS at GSA Reclamation Yard (GSRY) to be further investigated under existing SWMU #010 (GSRY).
2201-D21	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #26 – Former STP #14 and Abandoned Treatment Pond. PFAS at GSA Reclamation Yard (GSRY) to be further investigated under existing SWMU #010
2201-D22	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for No Further Action at LOC #21 – Former STP #2 and Effluent Disposal Area.
2201-D23	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that LOC #25 – Former STP #13 and Effluent Disposal Area will move to SWMU Assessment activities.
2201-D24	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus for additional SWMU Assessment at AOPC #16 – KARS Park I.
2201-D25	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that additional SWMU Assessment activities for AOPC #13 – Q6 Radar Station will be conducted to determine the source.
2201-D26	2201-M04	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** The Team reached consensus that the PFAS assessment at the South Repeater Building (formerly known as Area 3 Repeater Building) will be investigated under SWMU #122 South Repeater Building.

Revision 1 Meeting Minutes for October 5th and 6th, 2022

Attendees:

1. Bruce Moore/FDEP
2. Mike Deliz/NASA
3. Ryan O'Meara/NASA
4. Deda Johansen/NASA
5. Anne Chrest/NASA
6. Natasha Darre/NASA
7. Chris Adkison/NASA
8. Tim Appleman/NASA
9. Michelle Moore/NEMCON
10. Mark Jonnet/Tetra Tech
11. Alex Murphy/Tetra Tech
12. Chris Pike/ Tetra Tech
13. Mark Speranza/Tetra Tech
14. Andrew Walters/Tetra Tech
15. Jennifer Gootee/AECOM
16. Linnea King Clark/AECOM
17. Richard Smith/HGL
18. Howard Fowler/HGL
19. James (Jim) Montague/HGL

2210-M01 Bruce Moore/FDEP

Program Update

Discussion: The #1 issue at the Florida Department of Environmental Protection (FDEP) is the staffing situation. There are fourteen positions in the federal facilities program currently available. Some hires are imminent. Environmental Administrator Laura Barrett resigned. The goal is to fill the Environmental Administrator position by the end of October. Billy Hessman joined in May as a professional geologist (PG) II position. A variety of positions are open and need to be filled. If there is an urgent matter, please call Bruce directly and he can talk in the moment about it. The routine review process may take a while.

NASA inquired if funding was the issue or just not enough people were applying. FDEP stated it has been hard to attract and retain staff. FDEP is still using the three contractors for outside review and will lean heavily on them in the short term.

Support Building Area to the Team at the next meeting. Due to standing water, the planned DPT sampling had to be delayed. The results will be presented in a future meeting.

Results: Decision Items 2210-D12
Action Item 2210-A07

2210-M10 Howard Fowler/HGL

Base Support Building (SWMU 014) and KARS Park II (SWMU #118) PFAS Site Assessment Report

Objective:

The objective of the briefing is to summarize the site history and PFAS Site Assessment activities and results for the Base Support Building (SWMU 014) and Kennedy Athletic Recreation and Social (KARS) Park II (SWMU 118).

Discussion:

SWMU 014 Site History Overview

The Base Support Building (previously known as Maintenance and Operations [M&O] Building) is located southeast of the intersection of NASA Parkway and Kennedy Parkway in the Industrial Area. The building was constructed in 1964 and has been used to support space flight efforts including painting, carpentry, electrical work, vehicle and heavy equipment maintenance, fuel storage and dispensing, metal work, steam cleaning, and battery maintenance and storage. All KSC air rescue firefighting vehicles were maintained at the Base Support Building. Multiple environmental assessments and actions have been performed at the Base Support Building including underground storage tank (UST) removals, soil, groundwater, surface water and sediment sampling for volatile organic compounds, polynuclear aromatic hydrocarbons, and metals. No active groundwater remediation has been performed at the site. The site was in the KSC Industrial Area Long-Term Monitoring Program through 2018, when the groundwater cleanup target levels were attained for volatile organic compounds.

On November 2, 2006, a spill of Aqueous Film-Forming Form (AFFF) was reported to have occurred at the south tarmac of the

Base Support Building (M6-0486). Reportedly, a mixture of water and foam agent discharged from the fire engine plumbing when a mechanic opened the system for repairs. The mechanic contained the liquid on the pavement with spill socks and boom. The spill was reported to be approximately 20 gallons. During the Center-wide Per- and Polyfluorinated Alkyl Substances (PFAS) SWMU Assessment and Confirmatory Sampling project, perfluorooctane sulfonic acid (PFOS) concentrations were detected in groundwater and surface water samples above the State of Florida Provisional Groundwater Cleanup Level (pGCTL) and Surface Water Screening Level (SWSL) near the spill location and throughout the western Industrial Area. Two locations adjacent to the Base Support Building yielded samples with PFOS concentrations greater than 10,000 nanograms per liter (ng/L); reference Slide 16.

SWMU 118 Site History Overview

SWMU 118, KARS Park II, is located southwest of the intersection of NASA Parkway and Kennedy Parkway and west of SWMU 014. The area was developed as a recreational facility beginning in the late 1980s through 1990. The site has been used to stage construction materials and waste containers and includes two borrow pits used for road construction. It previously contained underground storage tanks. A spill of an unknown volume of AFFF reportedly occurred on May 17, 1993; however, additional details are not known. During the Center-Wide PFAS investigation, PFOS concentrations were detected in groundwater and surface water samples above the pGCTL and SWSL throughout the northern portion of KARS Park II including one location (PFAS-DPT0175) where PFOS concentrations were greater than 10,000 ng/L.

2022 Investigation Objectives

The initial objectives of the 2022 investigation were to delineate perfluorooctanoic acid (PFOA) and PFOS laterally and vertically to the pGCTL (70 ng/L separately or combined) and to develop a general understanding of the surface water and groundwater interactions at this area of KSC. The objective of the groundwater investigation was soon changed to delineating PFOS in groundwater to the SWSL of 10 ng/L. Following EPA's issuance of Regional Screening Levels (RSLs) in May 2022, the objective of the groundwater investigation was changed again to delineating to the RSLs of 4 ng/L for PFOS; 6

ng/L for PFOA, perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA; trade name GenX); 40 ng/L for perfluorohexanesulfonic acid (PFHxS); and 600 ng/L for perfluorobutanesulfonic acid (PFBS).

2022 Site Assessment Activities

The 2022 Site Assessment Activities included advancing two lithologic borings at SWMU 014 and one lithologic boring at SWMU 118 to a depth of 60 feet using a rotosonic drill rig. There were 105 direct push technology (DPT) groundwater samples collected from 22 locations at SWMU 014 and 57 DPT groundwater samples were collected from 11 locations at SWMU 118. Samples were collected with screen centerpoints at 5', 15', 256', 35', and 45' with and 55' samples added at 3 locations. Eleven surface water samples were collected from 11 locations at SWMU 014 and 17 surface water samples were collected from 8 locations at SWMU 118 using a dipper sampler. At 3 surface water locations at SWMU 118, 4 sets of surface water samples were collected between 5/16/22 and 6/23/2022 to evaluate temporal fluctuations in PFAS concentrations.

Between SWMU 014 and SWMU 118, 46 equipment and field blanks were collected. All results were below detection limits. Between SWMU 014 and SWMU 118, 26 field duplicate samples were collected. Two duplicate groundwater samples exceeded criteria for relative percent difference or limit of quantification for multiple compounds.

Lithologic Borings

Two lithologic borings were advanced at SWMU 014 and 1 lithologic boring was advanced at SWMU 118 to a depth of 60 feet using a rotosonic drill rig. The space between boring locations are 1,200 feet and 1,800 feet. The lithology of the three borings was highly variable. In general sand and shell was observed from land surface to a depth of 46 to 57 feet. The sand and shell layers were underlain by silt, shell and/or clay to a depth of 60 feet. The silt, shell and/or clay layer may serve as a retarding unit. Soil samples were not collected for laboratory analysis since the borings were placed in locations where deep PFAS impacts were not expected.

DPT Groundwater Sampling

Including the samples collected during the Center-wide PFAS investigation, 116 DPT groundwater samples collected at SWMU 014 and 65 DPT samples were collected at SWMU 118. Ninety-six samples exceeded the RSL for PFOS, 44 exceeded the RSL for PFHxS, 53 exceeded the RSL for PFOA, 12 exceeded the RSL for PFNA and 14 exceeded the RSL for PFBS. The estimated areal extent of groundwater with PFAS concentrations above the RSLs is 852 acres. The estimated areal extent of groundwater with PFAS concentrations 1000 times the RSLs is 19 acres.

To the north the plume is generally delineated along NASA Parkway. The plume is undelineated to the east and intermingled with multiple PFAS plumes from other SWMUs. The plume is partially delineated to the south and remains undelineated to the west. Vertical delineation still needed at 27 of 57 DPT sample locations below 45 feet. Three DPT samples were collected at 55' at 3 locations where PFOS concentrations at 45' ranged from 78.4 to 540 ng/L. PFAS concentrations were below RSLs in 2 samples (PFAS-DPT074 and PFAS-DPT0180). The PFOS concentration was 4.7J ng/L in the 3rd location (PFAS-DPT0183).

Surface Water Sampling

Between SWMU 014 and 118, 35 surface water samples were collected. Thirty-four results exceeded the FDEP SWSL for PFOS.

Four surface water samples were collected at 3 locations over a period of 5 weeks to observe the effect of precipitation on PFAS concentrations. In general, PFOS concentrations increased steadily during the study except for a slight decrease during the 2nd sampling event. Real time rain data was not available during the study. Staff gauges have not been installed in the study area. The study was inconclusive with respect to the effect of precipitation on PFAS concentrations.

In the vicinity of SWMU 014, all sampled surface water bodies have exceeded the SWSL (10 ng/L) for PFOS. PFOS concentrations exceed the SWSL at the point that connects to the stormwater system.

The canal on the east side of SWMU 118 is below the SWSL south of contact with the PFOS groundwater plume. PFOS concentrations

exceed the SWSL north of the contact point and west along the south side of Kennedy Parkway to the KSC Visitor Center. Before reaching the KSC Visitor Center, PFOS in surface water appears to be discharging back to groundwater based on similarities between the PFAS ratios in the two media.

The data to date suggests a source area at the Base Support Building with a resulting plume that underlies KARS II. A separate source area at KARS Park has not yet been found, although there was an AFFF release reported. Details on the release are lacking.

There was a question about the symbology on the slides that depict ratios of the PFAS compounds. HGL took an action to add a note to clarify for the reports **(2210-A08).** NASA would like to maintain consistency throughout all the PFAS presentations (e.g., triangle symbol for surface water, etc.). The NASA RPMs will get together and issue guidance to the A&E firms on the use of identifiers in presentations for consistency **(2210-A09).**

NASA noted for FDEP's information that the solar panel area north of the badging office was only recently developed (shown on Slide 35).

Summary

A single PFAS groundwater plume covers SWMU 014 and SWMU 118. To date, one source area has been identified. Other potential sources may exist. The PFAS plume appears commingled with other PFAS plumes to the east and remains undefined to the south and east. The plume has not been delineated vertically and extends to a depth of at least 55 feet. Boring logs indicate that the silt, shell and/or clay extends to a depth of at least 60 feet. This layer may serve as a retarding unit.

Nearly all sampled surface water bodies in the vicinity of SWMUs 014 and 118 have exceeded the SWSL for PFOS. PFOS concentrations exceed the SWSLs at points that connect to multiple stormwater canals in the western Industrial Area and at the canal on the east and north sides of KARS Park II. The PFOS groundwater plume appears to be discharging PFOS to the canal on the east and north sides of KARS Park II. Evidence of PFOS in groundwater discharging to surface water and PFOS in surface water discharging

to groundwater has been observed through the comparison of the ratios of PFAS analytes.

2023 Investigation Focus

The 2023 SLF PFAS investigation will treat KARS Park II and the Base Support Building a single study area (Western Industrial Area). The primary focus of the 2023 investigation will be on groundwater/surface water interactions. 2023 activities will include DPT groundwater sampling, monitoring well installation and sampling, staff gauge installations and surface water sampling. Water level measurements, staff gauge readings, surface water and groundwater samples will be collected on a quarterly basis from select locations.

FDEP inquired if we are sampling the water body north of the borrow pit? HGL responded that there is not a sample there. FDEP inquired if the water body is intermittent?

HGL stated that there is a surface water body. It was a difficult area to reach. NASA stated that clearing is an option if necessary. NASA took an action item to add a surface water sample there **(2210-A10).**

Regarding the overall Industrial Area, HGL did see a hydraulic divide between the Base Support Building and the Fire Station1/Sewage Treatment Plant 1 area. NASA added that there is commingling and we will likely have one Industrial Area program eventually.

Results: Action Items 2210-A08, A09, A10

2210-M11 Howard Fowler/HGL

<u>Fire Station #2, Former Sewage Treatment Plant #17, and Towway Area (SWMU 114)</u>

Goal:

The objective of the advance data package (ADP) is to summarize the site history and per- and polyfluoroalkyl substances (PFAS) Site Assessment activities and results for the Fire Station #2, Former Sewage Treatment Plant #17, and Towway Area. These locations are in the Shuttle Landing Facility (SLF) area.

APPENDIX B

SWMU-114 PFAS Site Assessment Report ADP

SWMU-014 AND SWMU 118
BASE SUPPORT BUILDING AND KARS PARK II
KENNEDY SPACE CENTER, FLORIDA

PFAS Site Assessment Report
PFAS

October, 2022

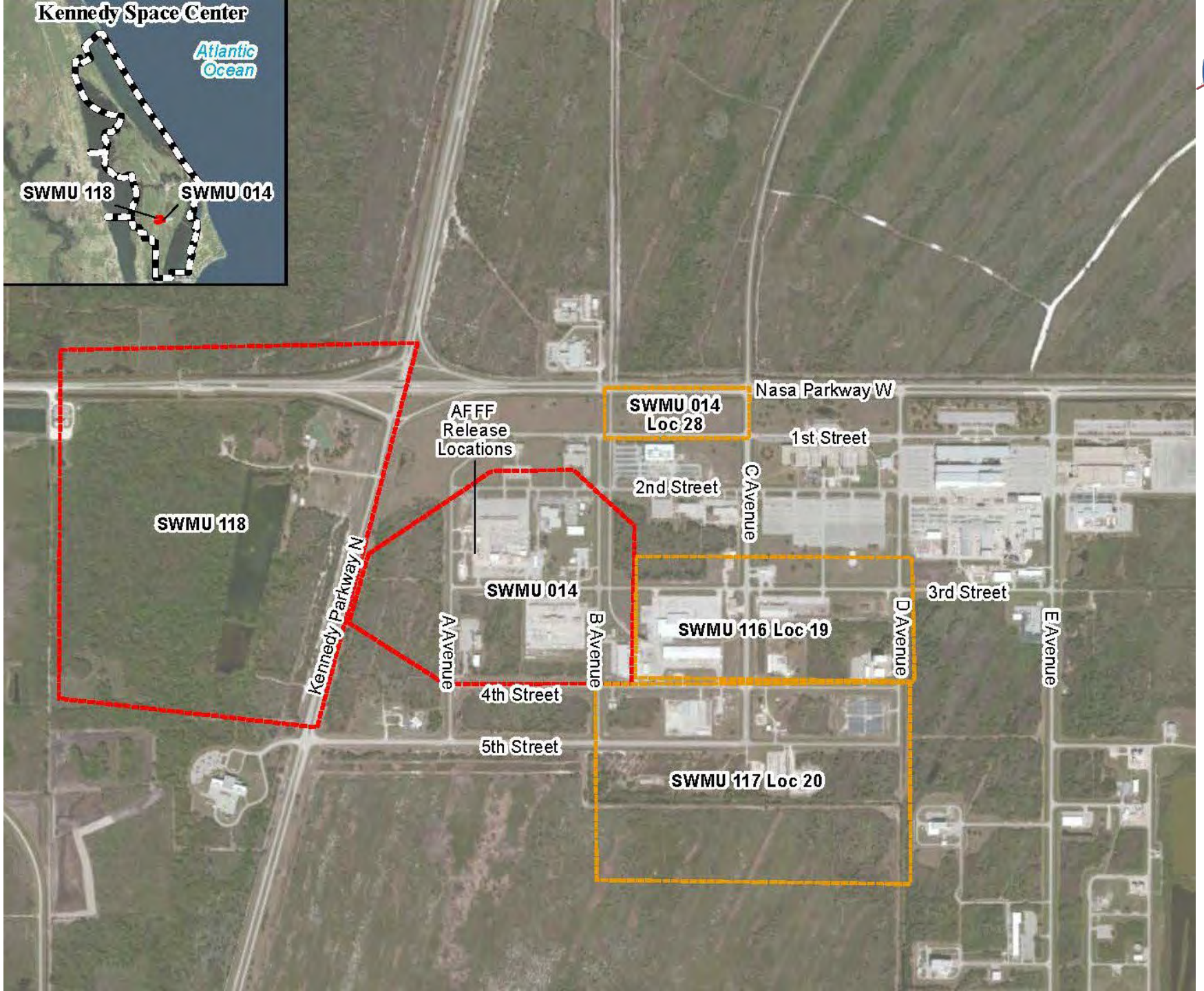
Presentation Overview

- Summarize Site History
- 2022 Investigation Objectives
- Site Investigation Activities
- Sample Results by Media
- Site Conceptual Model
- Summary

SWMU 014/118 Site Location



SWMU 014/118 Site Layout



SWMU 014 Site History Overview

- The Base Support Building (previously known as Maintenance and Operations [M&O] Building) is located southeast of the intersection of NASA Parkway and Kennedy Parkway in the industrial area.
- The building was constructed in 1964 and has been used to support space flight efforts including painting, carpentry, electrical work, vehicle and heavy equipment maintenance, fuel storage and dispensing, metal work, steam cleaning, and battery maintenance and storage.
- All Kennedy Space Center (KSC) air rescue firefighting vehicles were maintained at the Base Support Building.
- Multiple environmental assessments have been performed at the Base Support Building including underground storage tank (UST) removals, soil, groundwater, surface water and sediment sampling for volatile organic compounds, Polynuclear aromatic hydrocarbons, and metals.
- No active remediation has been performed at the site.
- The site is currently being monitored in the KSC Industrial Area Long-Term Monitoring Program.

SWMU 014 Site History Overview (Cont.)

- On November 2, 2006, a spill of Aqueous Film Forming Form (AFFF) was reported to have occurred at the South Tarmac of the Base Support Building (M6-0486).
- Reportedly, a mixture of water and foam agent discharged from the fire engine plumbing when a Heavy Equipment mechanic opened the system for repairs. The mechanic contained the liquid on the pavement with spill socks and boom. The spill was reported to be approximately 20 gallons.
- During Confirmation Sampling for the Center-Wide Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Assessment, Perfluorooctanesulfonate (PFOS) concentrations were detected in groundwater and surface water samples above the Provisional Groundwater Cleanup Level (pGCTL) and Surface Water Screening Level (SW SL) throughout the Western Industrial Area including 2 locations where PFOS concentrations were greater than 10,000 nanograms per liter (ng/L).

SWMU 118 Site History Overview

- SWMU 118, KARS Park II, is located southwest of the intersection of NASA Parkway and Kennedy Parkway and west of SWMU 014. The area was developed as a recreational facility beginning in the late 1980s through 1990. The site has been used to stage construction materials (including two borrow pits used for road construction) and waste containers, and it previously contained underground storage tanks.
- A spill of an unknown volume of AFFF reportedly occurred on May 17, 1993; however, additional details are not known.
- During Confirmation Sampling for the Center-Wide PFAS Assessment, PFOS concentrations were detected in groundwater and surface water samples above the pGCTL and SW SL throughout the northern portion of KARS Park II including 1 location (PFAS-DPT0175) where PFOS concentrations were greater than 10,000 ng/L.

2022 Investigation Objectives

Investigation objectives were modified as regulations evolved

- The initial objectives of the 2022 investigation were to delineate Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonate (PFOS) laterally and vertically to the pGCTL (70 ng/L separately or combined) and to develop a general understanding of the surface water and groundwater interactions at KSC.
- The objective of the groundwater investigation was changed to delineating PFAS compounds in groundwater to the Surface Water Screening Level (SW SL) of 10 ng/L for PFOS)
- The objective of the groundwater investigation was changed to delineating to the EPA Regional Screening Levels (RSLs) of 4 ng/L for PFOS; 6 ng/L for PFOA, Perfluorononanoic acid (PFNA), and Hexafluoropropylene oxide dimer acid (GenX); 40 ng/L for Perfluorohexanesulfonic acid (PFHxS); and 600 ng/L for Perfluorobutanesulfonic acid (PFBS).

2022 Investigation Activities

- Advanced 2 lithologic borings at SWMU 014 and 1 lithologic boring at SWMU 118 to a depth of 60 feet using a rotosonic drill rig.
- Collected 105 DPT groundwater samples from 22 locations at SWMU 014 and 57 DPT groundwater samples from 11 locations at SWMU 118. Samples collected at 5', 15', 25', 35', 45' (33 locations) and 55' (3 locations).
- Collected 11 surface water samples from 11 locations at SWMU 014 and 17 surface water samples from 8 locations at SWMU 118 using a dipper sampler. At 3 surface water locations at SWMU 118, 4 sets of surface water samples were collected between 5/16/22 and 6/23/2022 to evaluate temporal fluctuations in PFAS concentrations.

2022 Investigation QC Samples

- Between SWMU 014 and SWMU 118, 46 equipment and field blanks were collected. All results were below detection limits.
- Between SWMU 014 and SWMU 118, 26 field duplicate samples were collected. Two duplicate groundwater samples exceeded criteria for relative percent difference or limit of quantification for multiple compounds.

Lithologic Borings

- Two lithologic borings were advanced at SWMU 014 and 1 lithologic boring was advanced at SWMU 118 to a depth of 60 feet using a rotosonic drill rig.
- The space between boring locations are 1,200 feet and 1,800 feet.
- The lithology of the three borings was highly variable.
- In general sand and shell was observed from land surface to a depth of 46 to 57 feet.
- The sand and shell was underlain by silt, shell and/or clay to a depth of 60 feet.
- The silt, shell and/or clay layer may serve as a retarding unit.
- Soil samples were not collected for laboratory analysis since the borings were placed in locations where deep PFAS impacts were not expected.

S118-LB01 Soil Cores



S118-LB01

Depth (feet bls)	**Brief Description**
0-10'	Primarily Sand and Shell
10'-18'	Silt and Shell
18'-50'	Primarily Sand and Shell
50'-60'	Shell Hash with Clayey Silt

S014-LB01 Soil Cores



S014-LB01

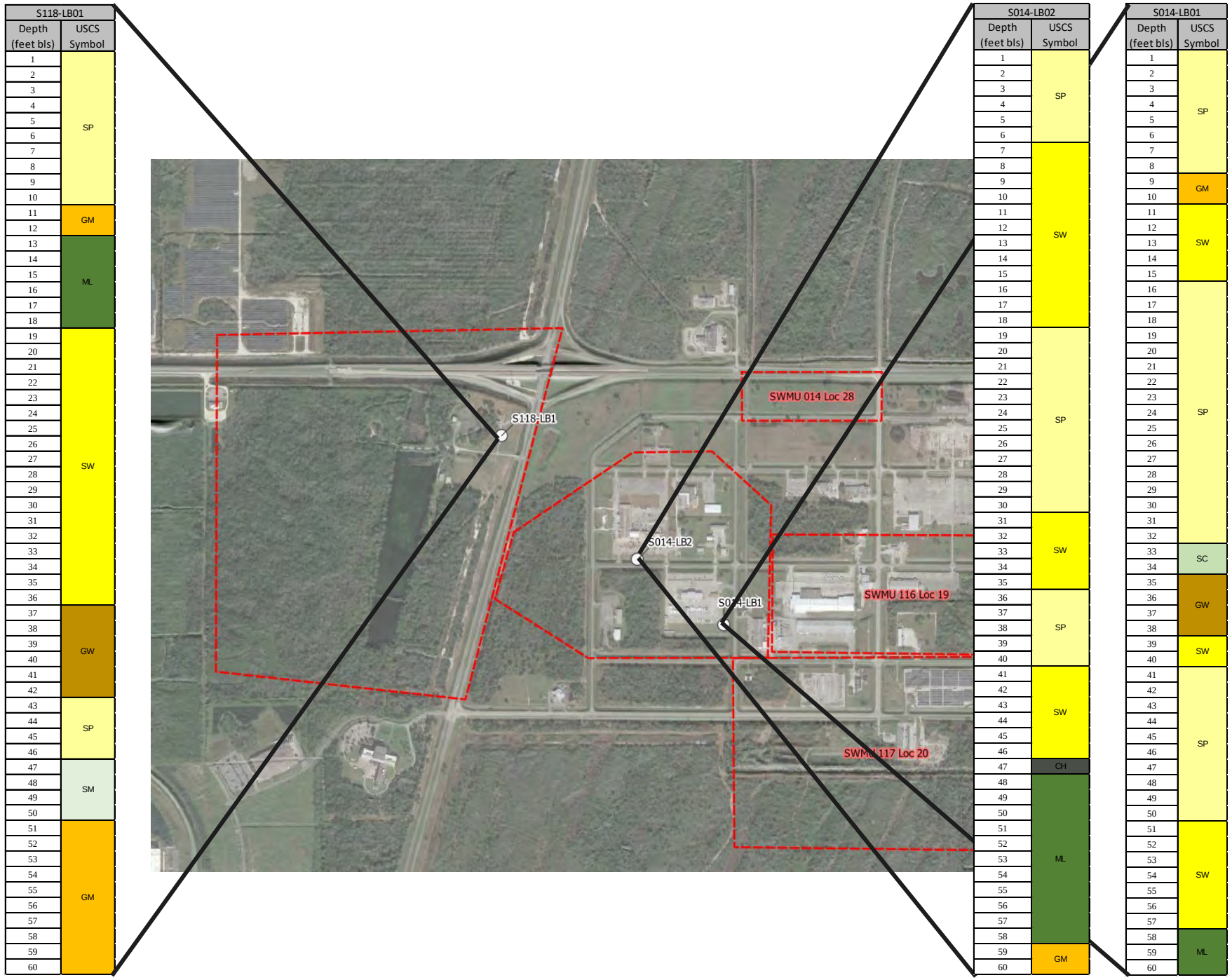
Depth (feet bls)	Brief Description
0-57'	Primarily Sand and Shell
57'-60'	Clayey Silt and Shell

S014-LB02 Soil Cores

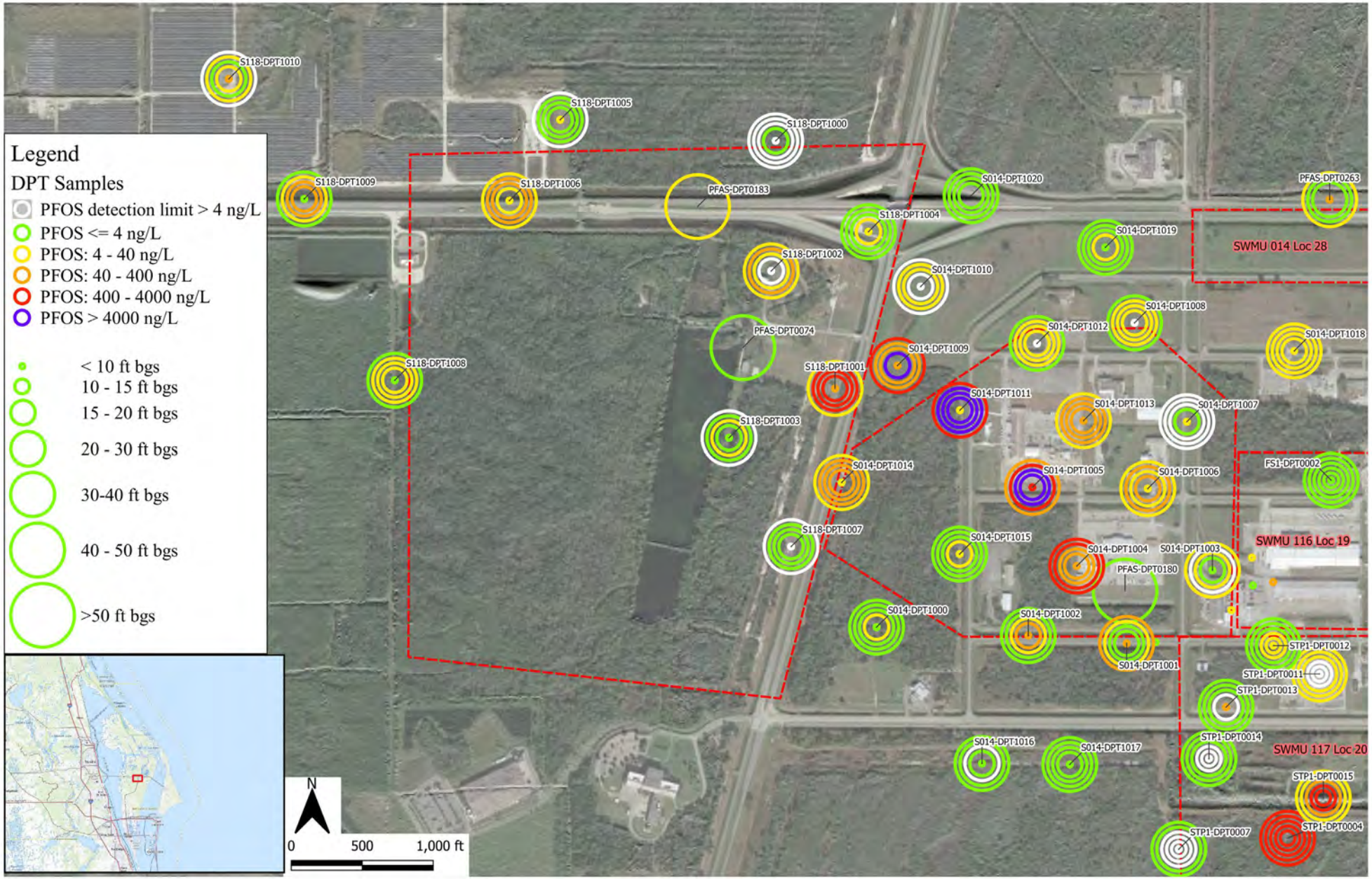


S014-LB02	
Depth (feet bls)	Brief Description
0-46'	Primarily Sand and Shell
46'-58'	Silts and Clay
58'-60'	Shell Hash with Silt

Lithologic Borings

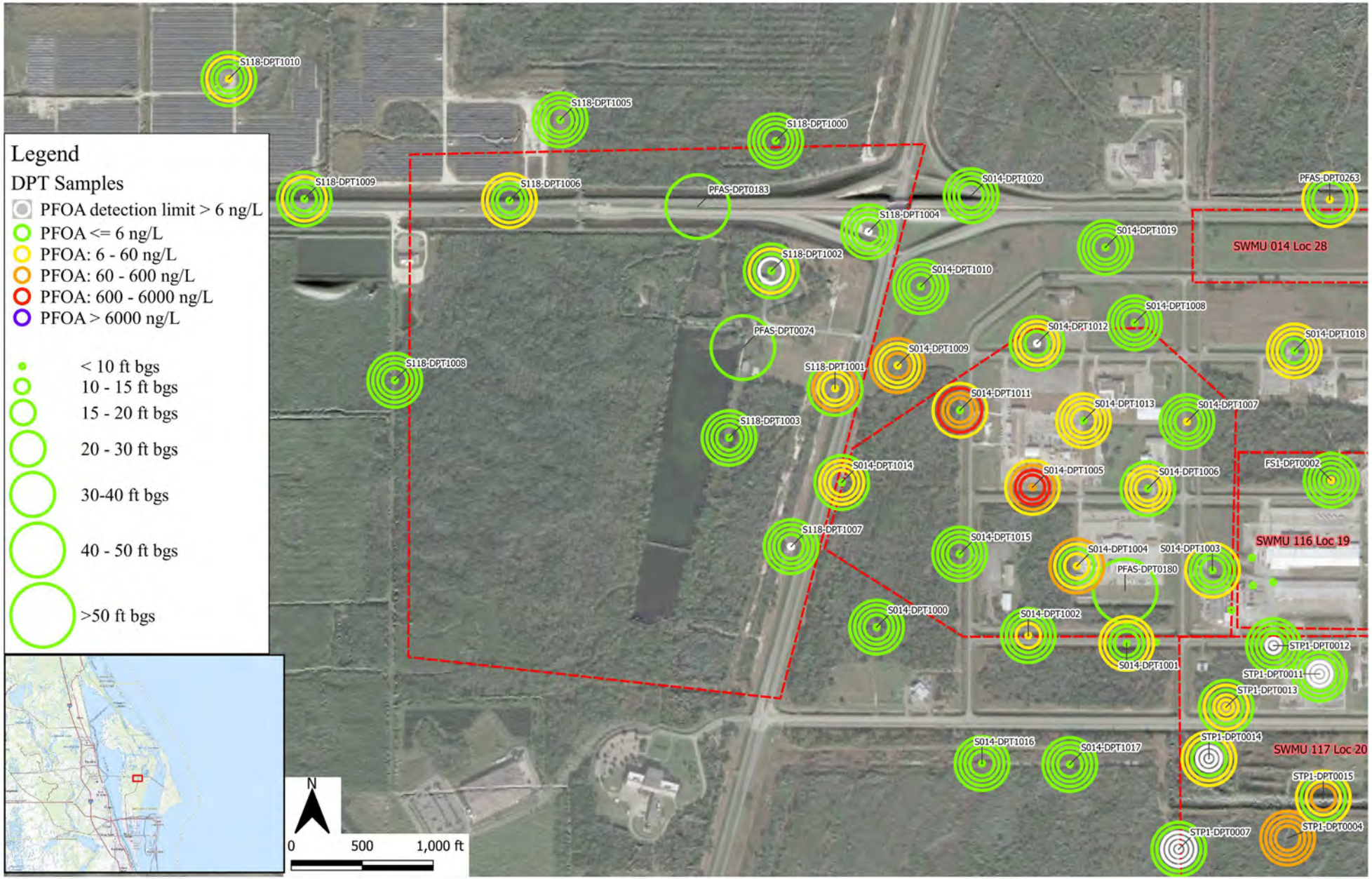


Legend	
GW	Well graded gravel
GM	Gravel with silt
GC	Gravel with clay
SW	Well graded sand
SP	Poorly graded sand
SM	Sand with silt
SC	Sand with clay
ML	Inorganic silt with low plasticity
CL	Inorganic clay with low plasticity
CH	Inorganic clay with high plasticity



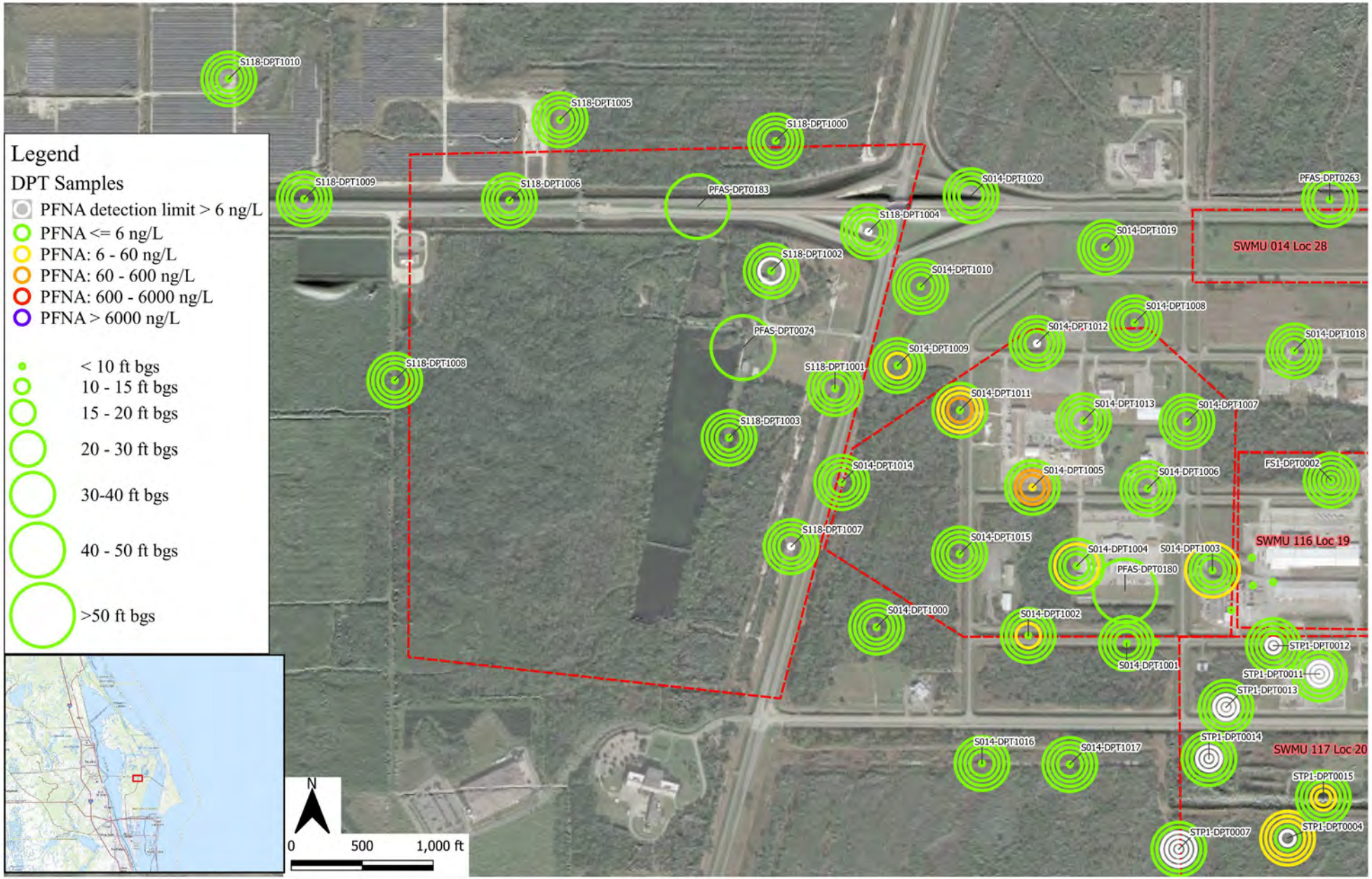
PFOS DPT Groundwater Results 2/23/2022 – 6/22/2022

- 29 samples had detection limits greater than 4 ng/L
- 9 of the samples had detection limits of 4.2 ng/L
- 7 of the samples had detection limits between 4.3 and 5.0 ng/L
- 13 of the samples had detection limits between 5 and 20 ng/L



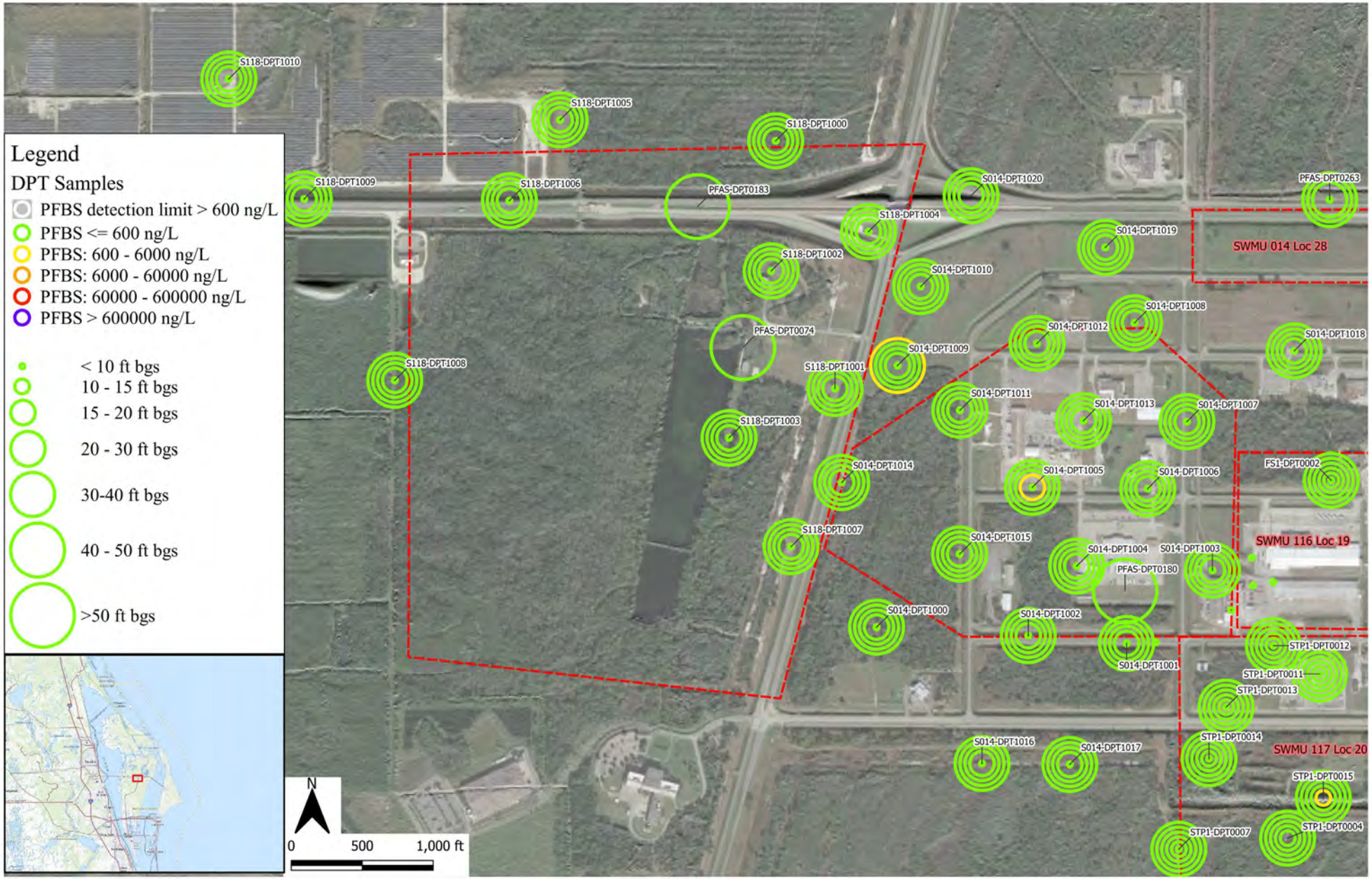
PFOA DPT Groundwater Results 2/23/2022 – 6/22/2022

- 16 samples had detection limits greater than 6 ng/L
- 3 of the samples had detection limits between 6.9 and 9.1 ng/L
- 13 of the samples had detection limits between 10 and 20 ng/L

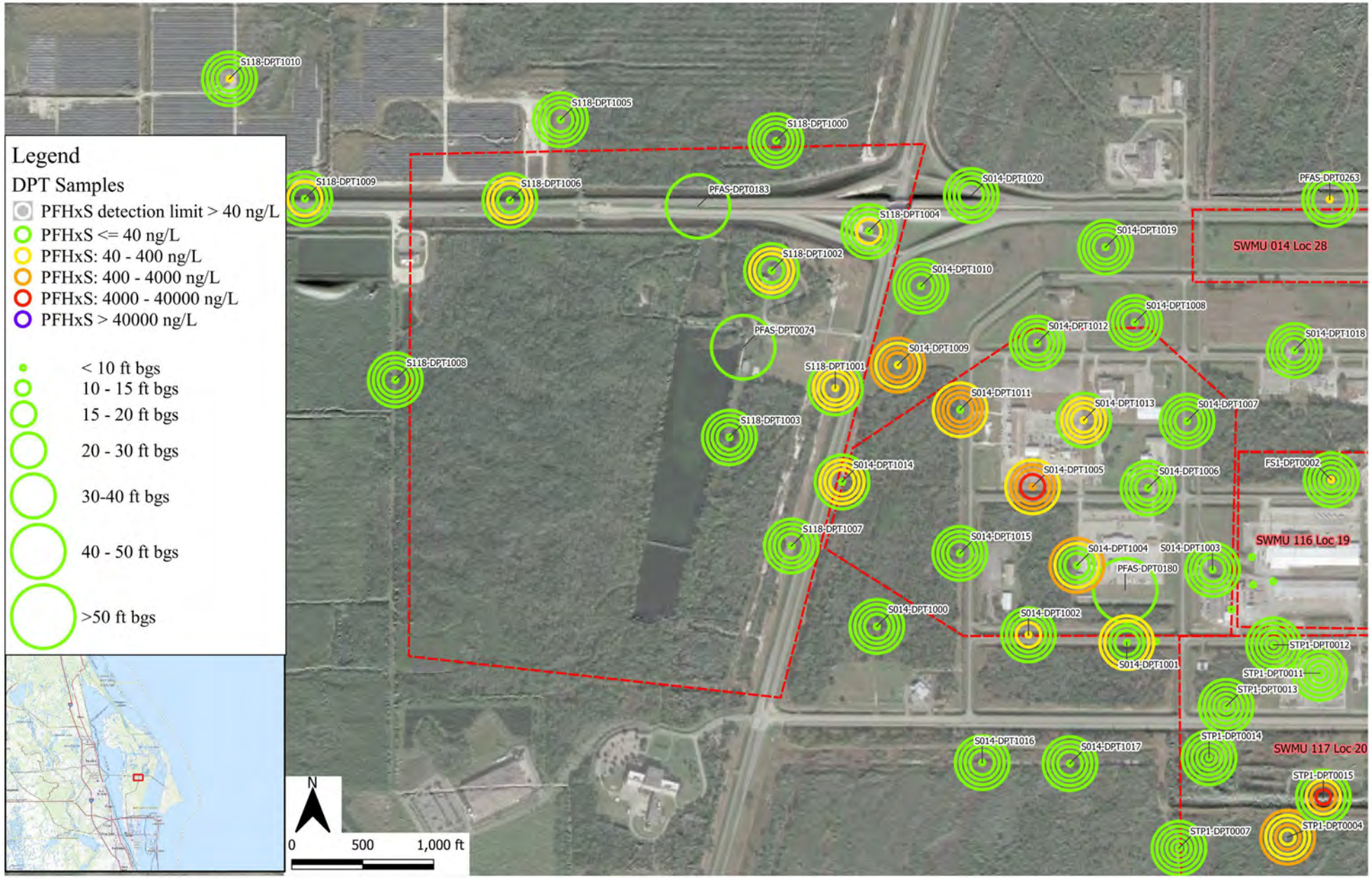


PFNA DPT Groundwater Results 2/23/2022 – 6/22/2022

- 17 samples had detection limits greater than 6 ng/L
- 3 of the samples had detection limits between 6.9 and 9.1 ng/L
- 14 of the samples had detection limits between 10 and 20 ng/L



PFBS DPT Groundwater Results 2/23/2022 – 6/22/2022



PFHxS DPT Groundwater Results 2/23/2022 – 6/22/2022

SWMU 014 DPT Groundwater Statistics 2/23/2022 – 6/22/2022

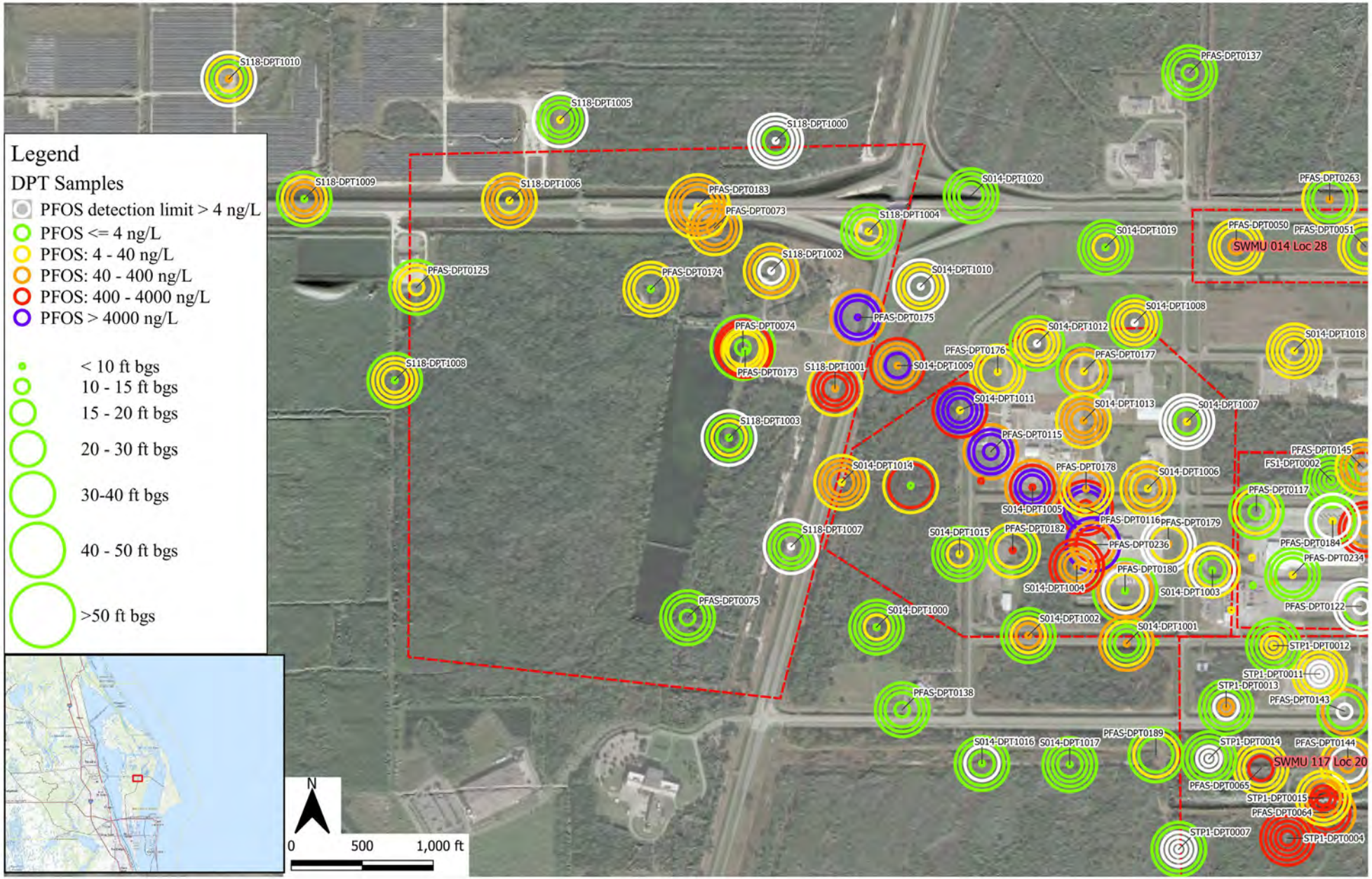
	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	Depth Interval of Maximum Concentration	RSL [(1)]	Number of Detections Exceeding RSL
Carboxylates	PFBA	116	54	4.4	900	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFPeA	116	55	2.2	3470	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFHxA	116	61	2.1	3740	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFHpA	116	49	2	1330	S014-DPT1011	33 - 37 ft bgs	N/A	
	PFOA	116	62	2.3	1500	S014-DPT1011	33 - 37 ft bgs	6	43
	PFNA	116	18	2.5	97.8	S014-DPT1005	13 - 17 ft bgs	6	12
	PFDA	116	8	2.2	39.7	S014-DPT1003	43 - 47 ft bgs	N/A	
	PFUnA	116	2	13	43.3	S014-DPT1003	43 - 47 ft bgs	N/A	
	PFDoA	116	2	14.1	44.7	S014-DPT1003	43 - 47 ft bgs	N/A	
	PFTriA	116	2	14.4	49.7	S014-DPT1003	43 - 47 ft bgs	N/A	
	PFTeA	116	2	11.8	37.3	S014-DPT1003	43 - 47 ft bgs	N/A	
Sulfonates	PFBS	116	36	2.3	1230	S014-DPT1005	13 - 17 ft bgs	600	4
	PFPeS	116	35	3.2	1350	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFHxS	116	74	2.1	10600	S014-DPT1005	13 - 17 ft bgs	40	31
	PFHpS	116	30	2.4	723	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFOS	116	74	2.4	50200	S014-DPT1005	13 - 17 ft bgs	4	67
	PFNS	116	5	10.6	93.8	S014-DPT1005	13 - 17 ft bgs	N/A	
	PFDS	116	1	4.5	4.5	S014-DPT1005	33 - 37 ft bgs	N/A	
Precursors / Fluorotelomers	PFOSA	116	10	2.4	28.1	S014-DPT1013	33 - 37 ft bgs	N/A	
	NMeFOSAA	116	0	No Detections	No Detections	No Detections	No Detections	N/A	
	NEtFOSAA	116	2	17.6	54.9	S014-DPT1013	33 - 37 ft bgs	N/A	
	4:2 FTS	116	13	5.5	494	S014-DPT1011	33 - 37 ft bgs	N/A	
	6:2 FTS	116	23	4.6	19100	S014-DPT1011	33 - 37 ft bgs	N/A	
	8:2 FTS	116	11	4.5	1810	S014-DPT1011	13 - 17 ft bgs	N/A	
	GenX	116	0	No Detections	No Detections	No Detections	No Detections	6	0

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
RSL = Regional Screening Level
N/A = not established

SWMU 118 DPT Groundwater Statistics 2/23/2022 – 6/22/2022

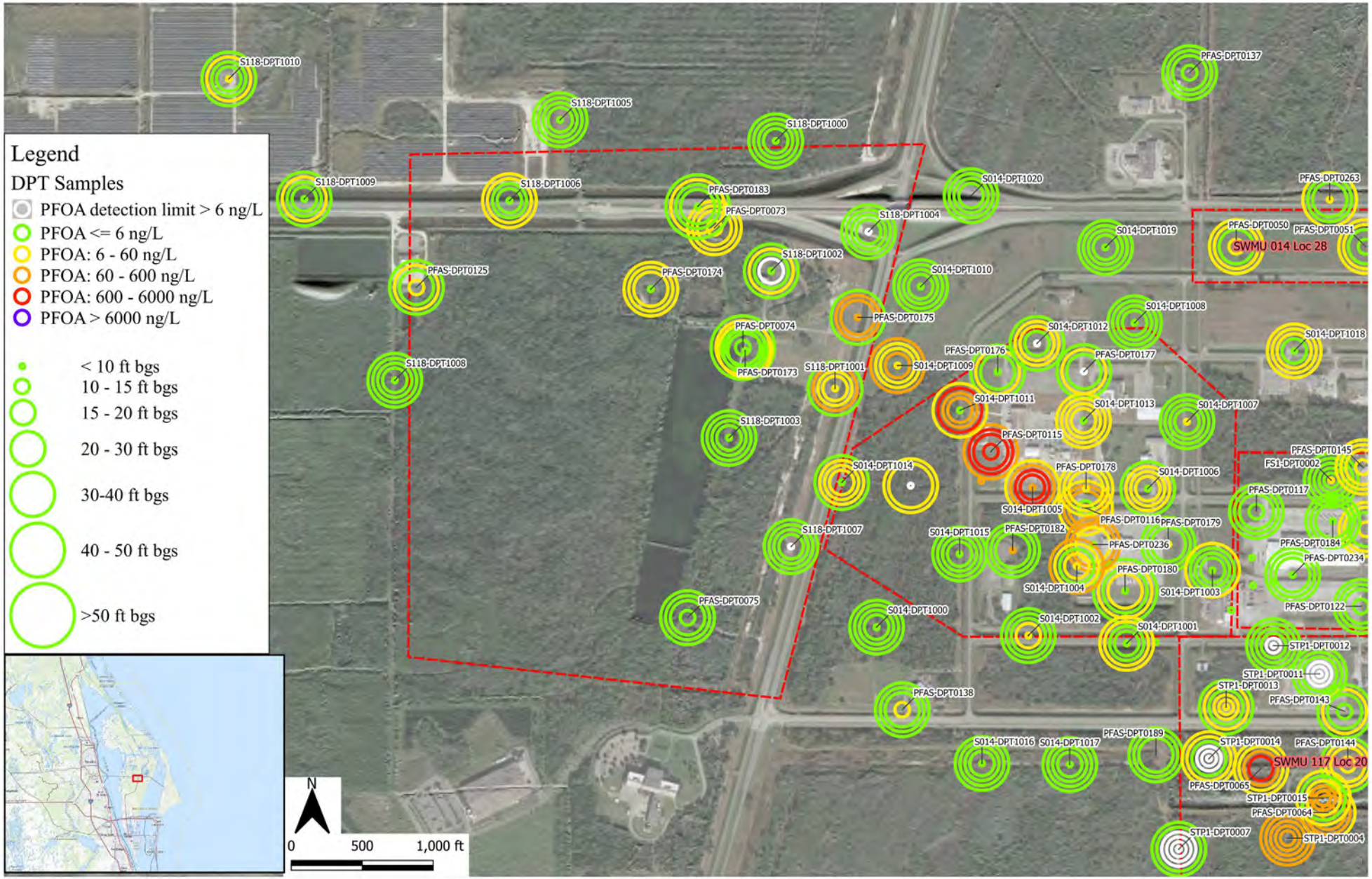
	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	Depth Interval of Maximum Concentration	RSL [(1)]	Number of Detections Exceeding RSL
Carboxylates	PFBA	65	23	4.1	89.4	S118-DPT1010	3 - 7 ft bgs	N/A	
	PFPeA	65	28	2	76.3	S118-DPT1001	33 - 37 ft bgs	N/A	
	PFHxA	65	27	2	112	S118-DPT1001	33 - 37 ft bgs	N/A	
	PFHpA	65	21	2.3	39.3	S118-DPT1001	33 - 37 ft bgs	N/A	
	PFOA	65	26	2	67.3	S118-DPT1001	33 - 37 ft bgs	6	10
	PFNA	65	2	2.8	3.9	S118-DPT1001	33 - 37 ft bgs	6	0
	PFDA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	PFUnA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	PFDoA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	PFTriA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	PFTeA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
Sulfonates	PFBS	65	28	2.2	32.4	S118-DPT1001	33 - 37 ft bgs	600	0
	PFPeS	65	22	2.6	42.8	S118-DPT1001	33 - 37 ft bgs	N/A	
	PFHxS	65	38	2.6	345	S118-DPT1001	33 - 37 ft bgs	40	13
	PFHpS	65	12	2.6	37.8	S118-DPT1010	3 - 7 ft bgs	N/A	
	PFOS	65	37	2.2	1510	S118-DPT1001	33 - 37 ft bgs	4	29
	PFNS	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	PFDS	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
Precursors / Fluorotelomers	PFOSA	65	3	2.5	41.8	S118-DPT1001	33 - 37 ft bgs	N/A	
	NMeFOSAA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	NEtFOSAA	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	4:2 FTS	65	0	No Detections	No Detections	No Detections	No Detections	N/A	
	6:2 FTS	65	5	9.3	37.6	S118-DPT1001	33 - 37 ft bgs	N/A	
	8:2 FTS	65	1	4.8	4.8	S118-DPT1001	33 - 37 ft bgs	N/A	
	GenX	65	0	No Detections	No Detections	No Detections	No Detections	6	0

Notes:
(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)
RSL = Regional Screening Level
N/A = not established



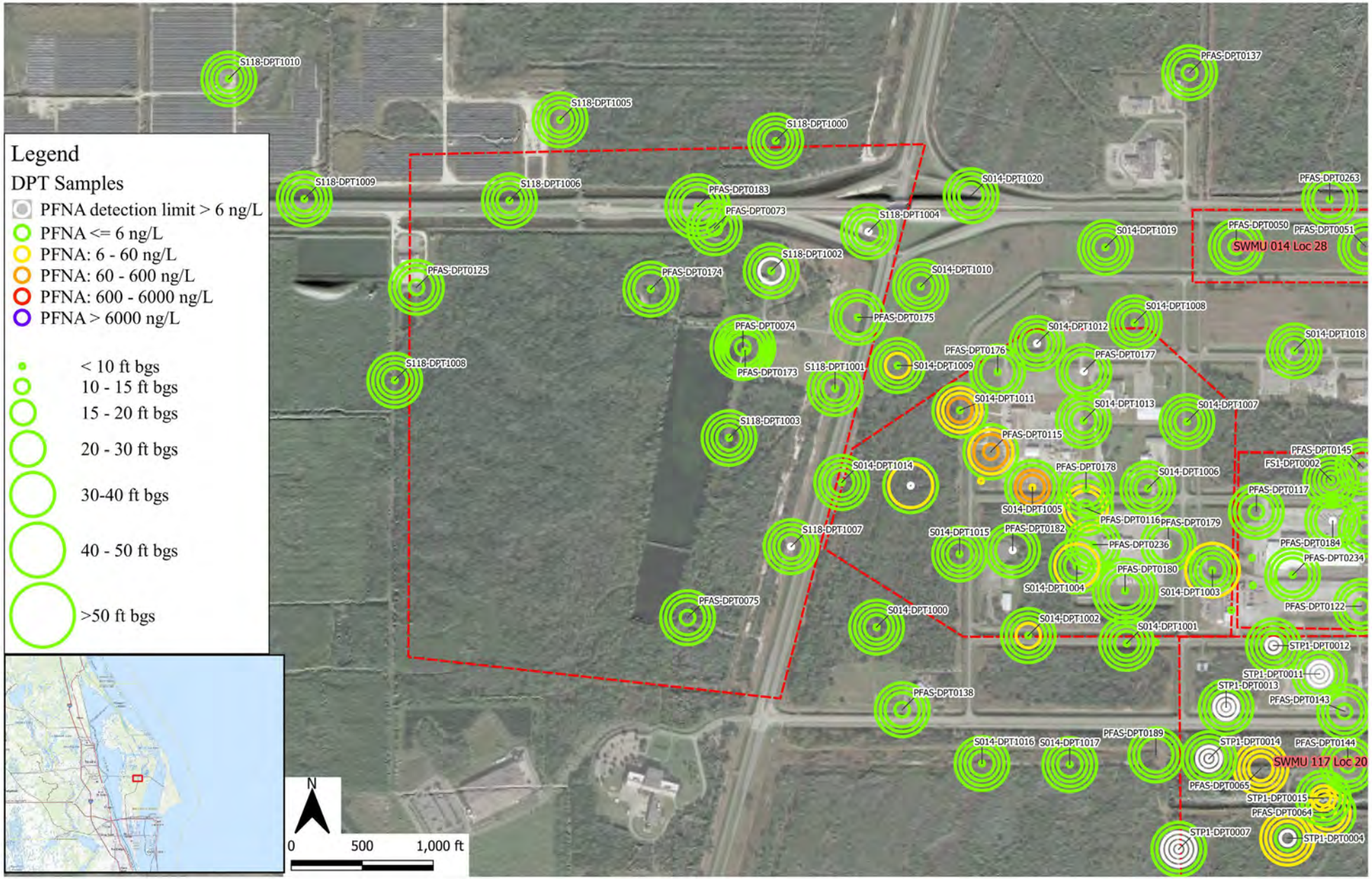
PFOS DPT Groundwater Results All Samples (2019-2022)

- 32 samples had detection limits greater than 4 ng/L
- 10 of the samples had detection limits of 4.2 ng/L
- 9 of the samples had detection limits between 4.3 and 5.0 ng/L
- 13 of the samples had detection limits between 5 and 20 ng/L



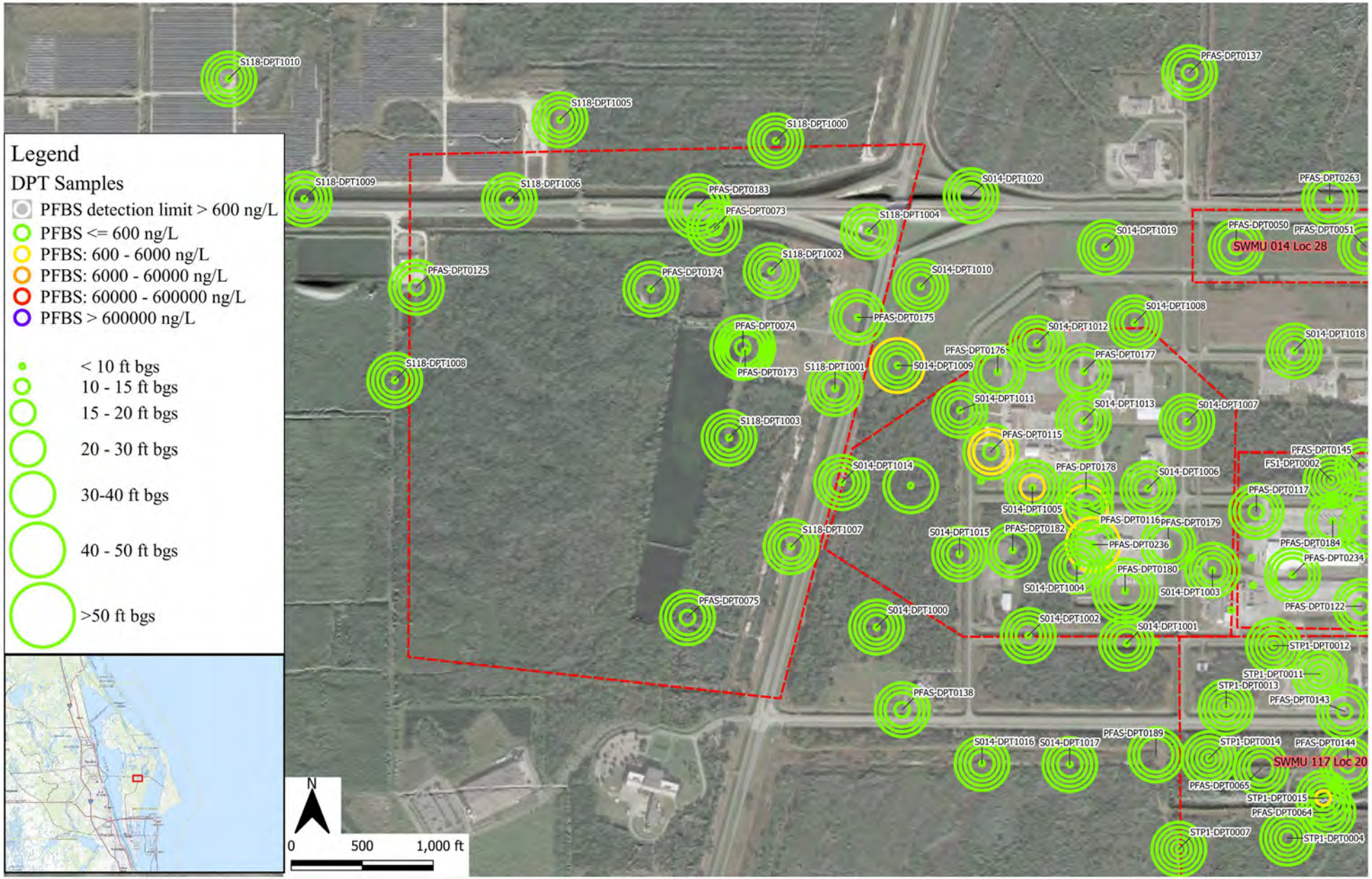
PFOA DPT Groundwater Results All Samples (2019-2022)

- 18 samples had detection limits greater than 6 ng/L
- 4 of the samples had detection limits between 6.9 and 9.1 ng/L
- 14 of the samples had detection limits between 10 and 20 ng/L

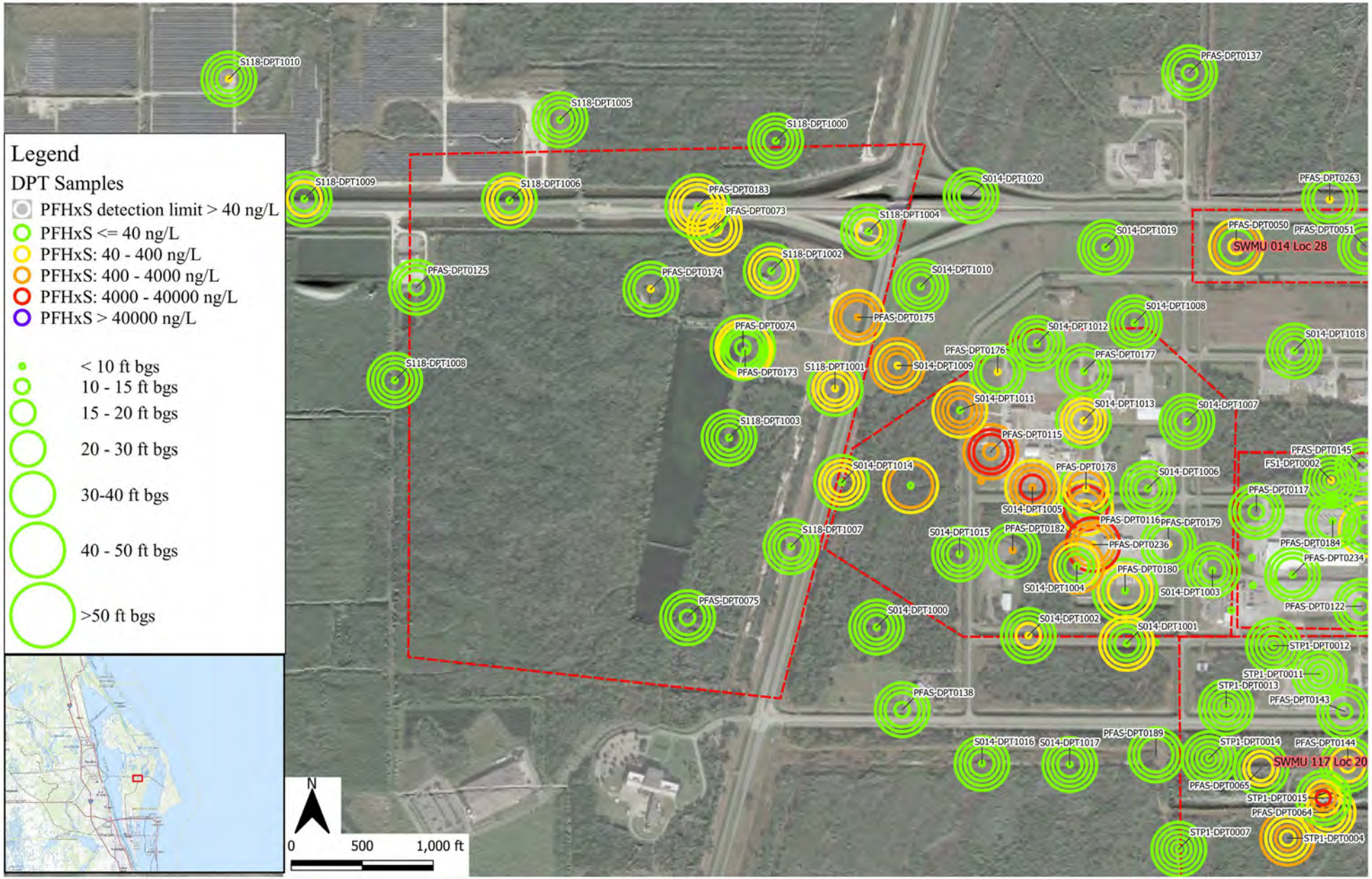


PFNA DPT Groundwater Results All Samples (2019-2022)

- 24 samples had detection limits greater than 6 ng/L
- 4 of the samples had detection limits between 6.9 and 9.1 ng/L
- 20 of the samples had detection limits between10 and 20 ng/L



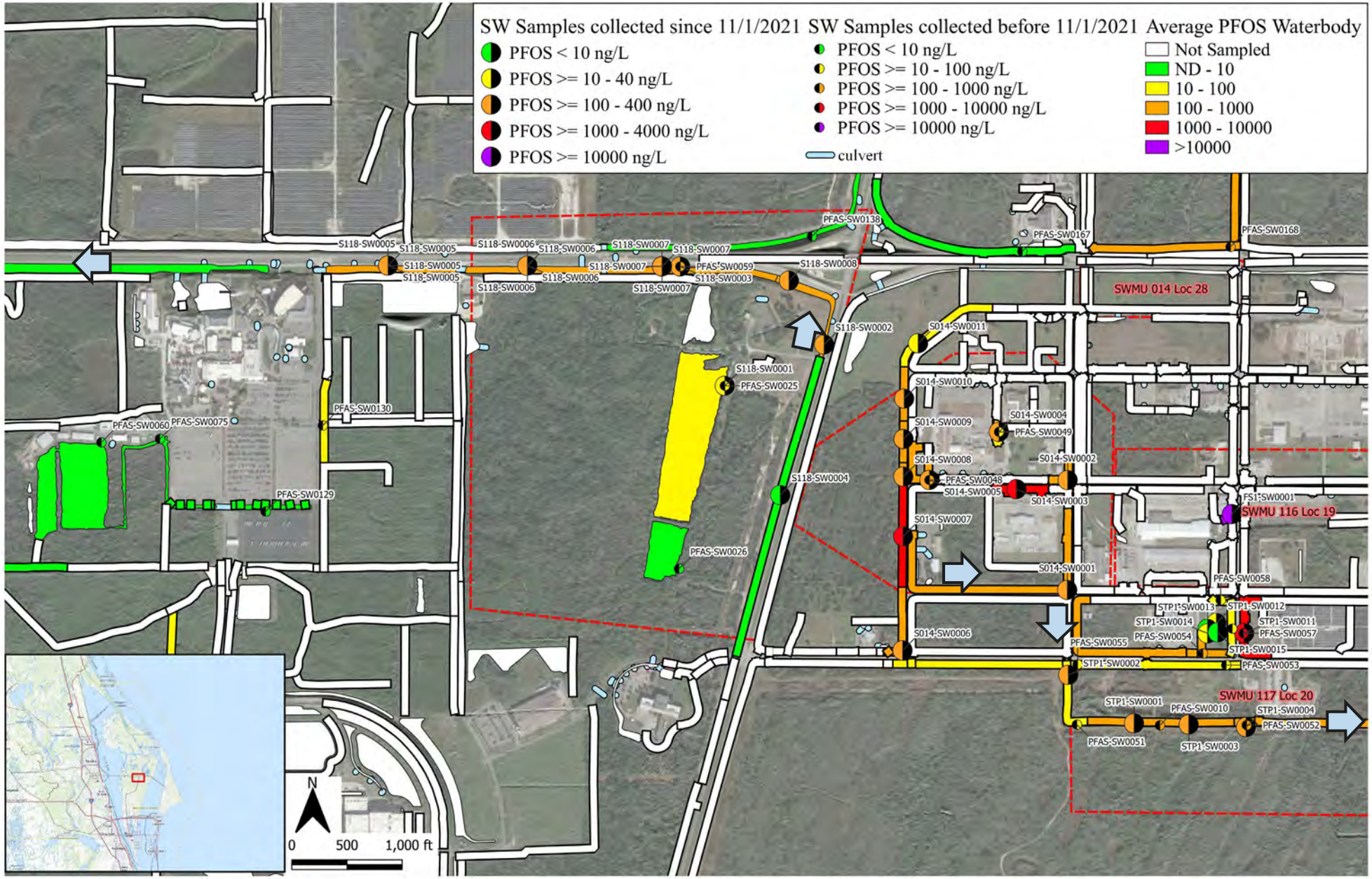
PFBS DPT Groundwater Results All Samples (2019-2022)



PFHxS DPT Groundwater Results All Samples (2019-2022)

Groundwater Plume Delineation Status

- The estimated aerial extent of groundwater with PFAS concentrations above the RSLs is 852 acres.
- The estimated aerial extent of groundwater with PFAS concentrations 1000 times the RSLs is 19 acres.
- Lateral Delineation:
  - North– Generally delineated along NASA Parkway.
  - East – Remains undelineated. Plume appears intermingled with multiple other PFAS plumes from other SWMUs.
  - South – Partially delineated.
  - West and southwest – Remains undelineated.
- Vertical Delineation:
  - Vertical delineation still needed at 27 of 57 DPT sample locations below 45 feet.
  - 3 DPT samples were collected at 55’ at 3 locations where PFOS concentrations at 45’ ranged from 78.4 to 540 ng/L.
    - PFAS concentrations were below RSLs in 2 samples (PFAS-DPT074 and PFAS-DPT0180).
    - PFOS concentration was 4.7J ng/L in 3rd location (PFAS-DPT0183)

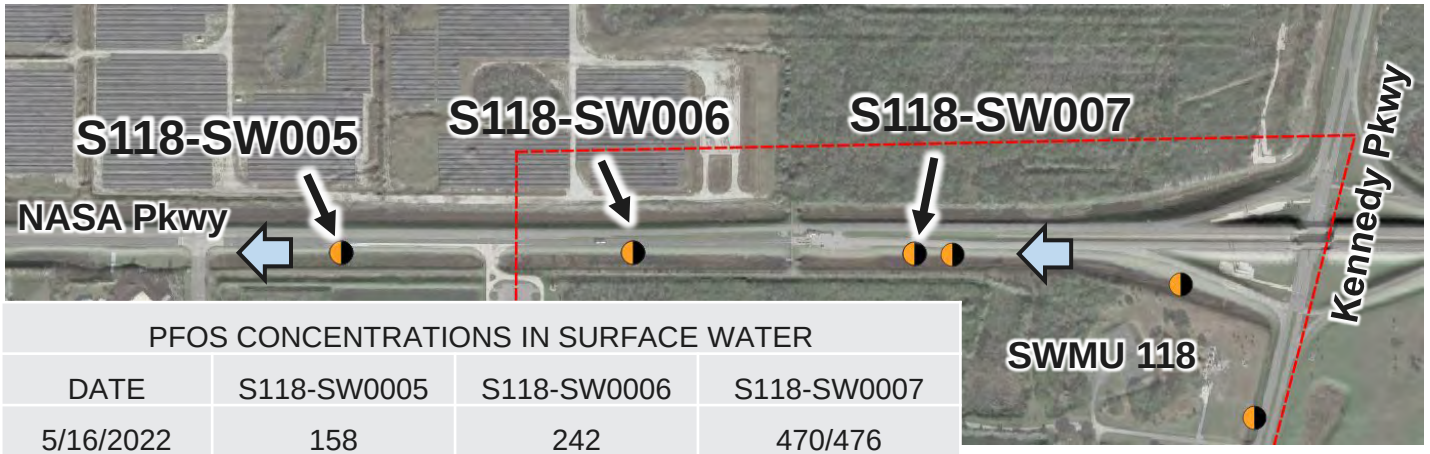


Surface Water PFOS Results

SW flow direction

Note: PFOA did not exceed FDEP screening levels in any samples at SWMU 014 and 118

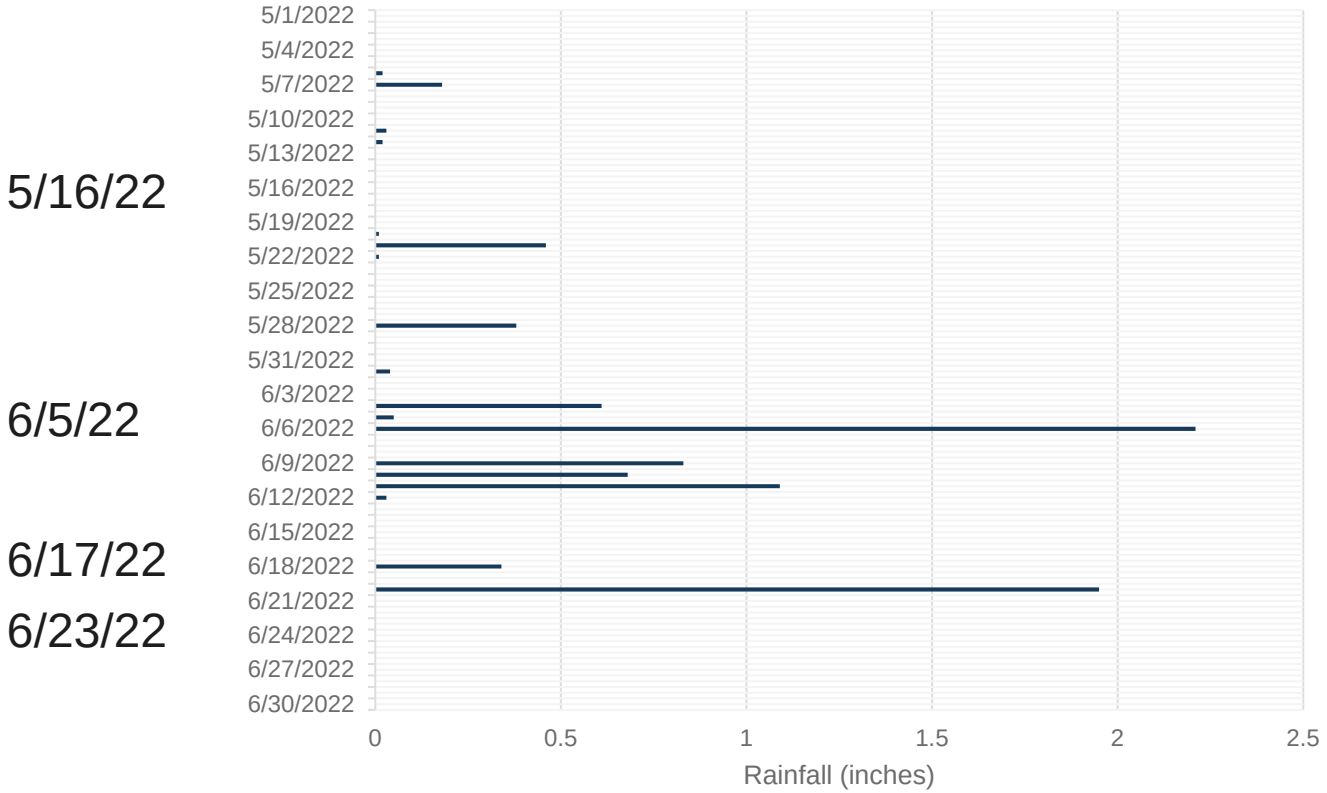
Time Series Surface Water Date



PFOS CONCENTRATIONS IN SURFACE WATER

DATE	S118-SW0005	S118-SW0006	S118-SW0007
5/16/2022	158	242	470/476
6/5/2022	143	237	451
6/17/2022	162/172	442	542
6/23/2022	165	541/562	708

Rainfall Data



- 4 surface water samples were collected at 3 locations over a period of 5 weeks to observe the effect of precipitation on PFAS concentrations.
- In general, PFOS concentrations increased steadily during the study except for a slight decrease during the 2nd sampling event.
- Real time rain data was not available during the study.
- Staff gauges have not been installed in the study area.
- The study was inconclusive with respect to the effect of precipitation on PFAS concentrations.

Surface Water Statistics SWMU 014

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	SW SL [(1)]	Number of Detections Exceeding SW SL
Carboxylates	PFBA	13	13	13.7	74.5	S014-SW0007	N/A	
	PFPeA	13	13	16.4	176	S014-SW0007	N/A	
	PFHxA	13	13	12.1	210	S014-SW0007	N/A	
	PFHpA	13	13	11.5	90.8	S014-SW0007	N/A	
	PFOA	13	13	7.9	81.5	S014-SW0007	500	0
	PFNA	13	10	2	10	S014-SW0007	N/A	
	PFDA	13	1	2.2	2.2	S014-SW0008	N/A	
	PFUnA	13	0	No Detections	No Detections	No Detections	N/A	
	PFDoA	13	0	No Detections	No Detections	No Detections	N/A	
	PFTriA	13	0	No Detections	No Detections	No Detections	N/A	
	PFTeA	13	0	No Detections	No Detections	No Detections	N/A	
Sulfonates	PFBS	13	13	4.5	127	S014-SW0007	N/A	
	PFPeS	13	13	5.6	167	S014-SW0007	N/A	
	PFHxS	13	13	39.2	1130	S014-SW0007	N/A	
	PFHpS	13	13	2.9	62.5	S014-SW0007	N/A	
	PFOS	13	13	76.7	1710	S014-SW0003	10	13
	PFNS	13	0	No Detections	No Detections	No Detections	N/A	
	PFDS	13	0	No Detections	No Detections	No Detections	N/A	
Precursors / Fluorotelomers	PFOSA	13	4	2.1	7.3	S014-SW0003	N/A	
	NMeFOSAA	13	0	No Detections	No Detections	No Detections	N/A	
	NEtFOSAA	13	0	No Detections	No Detections	No Detections	N/A	
	4:2 FTS	13	0	No Detections	No Detections	No Detections	N/A	
	6:2 FTS	13	5	4.4	47.1	S014-SW0008	N/A	
	8:2 FTS	13	0	No Detections	No Detections	No Detections	N/A	
	GenX	13	0	No Detections	No Detections	No Detections	N/A	

Notes:

(1): FDEP, 2020. Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment.

SW SL = Surface Water Screening Level

N/A = not established

Surface Water Statistics SWMU 118

	Parameter	Number of Samples	Number of Detections	Minimum Concentration (ng/L)	Maximum Concentration (ng/L)	Location with Maximum Concentration	SW SL [(1)]	Number of Detections Exceeding SW SL
Carboxylates	PFBA	22	22	5.5	48.9	S118-SW0001	N/A	
	PFPeA	22	20	3.1	162	S118-SW0001	N/A	
	PFHxA	22	21	12.4	87.3	S118-SW0001	N/A	
	PFHpA	22	21	3	70.2	S118-SW0001	N/A	
	PFOA	22	21	3.6	36.2	S118-SW0001	500	0
	PFNA	22	1	9.7	9.7	S118-SW0001	N/A	
	PFDA	22	0	No Detections	No Detections	No Detections	N/A	
	PFUnA	22	0	No Detections	No Detections	No Detections	N/A	
	PFDoA	22	0	No Detections	No Detections	No Detections	N/A	
	PFTriA	22	0	No Detections	No Detections	No Detections	N/A	
	PFTeA	22	0	No Detections	No Detections	No Detections	N/A	
Sulfonates	PFBS	22	21	2.2	16.5	S118-SW0007	N/A	
	PFPeS	22	21	2.9	21.5	S118-SW0007	N/A	
	PFHxS	22	21	17.2	204	S118-SW0007	N/A	
	PFHpS	22	19	2.8	12.8	S118-SW0007	N/A	
	PFOS	22	22	5.7	708	S118-SW0007	10	21
	PFNS	22	0	No Detections	No Detections	No Detections	N/A	
	PFDS	22	0	No Detections	No Detections	No Detections	N/A	
Precursors / Fluorotelomers	PFOSA	22	0	No Detections	No Detections	No Detections	N/A	
	NMeFOSAA	22	0	No Detections	No Detections	No Detections	N/A	
	NEtFOSAA	22	0	No Detections	No Detections	No Detections	N/A	
	4:2 FTS	22	0	No Detections	No Detections	No Detections	N/A	
	6:2 FTS	22	0	No Detections	No Detections	No Detections	N/A	
	8:2 FTS	22	0	No Detections	No Detections	No Detections	N/A	
	GenX	22	0	No Detections	No Detections	No Detections	N/A	

Notes:

(1): FDEP, 2020. Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment.

SW SL = Surface Water Screening Level

N/A = not established

Delineation of Surface Water Impacts Status

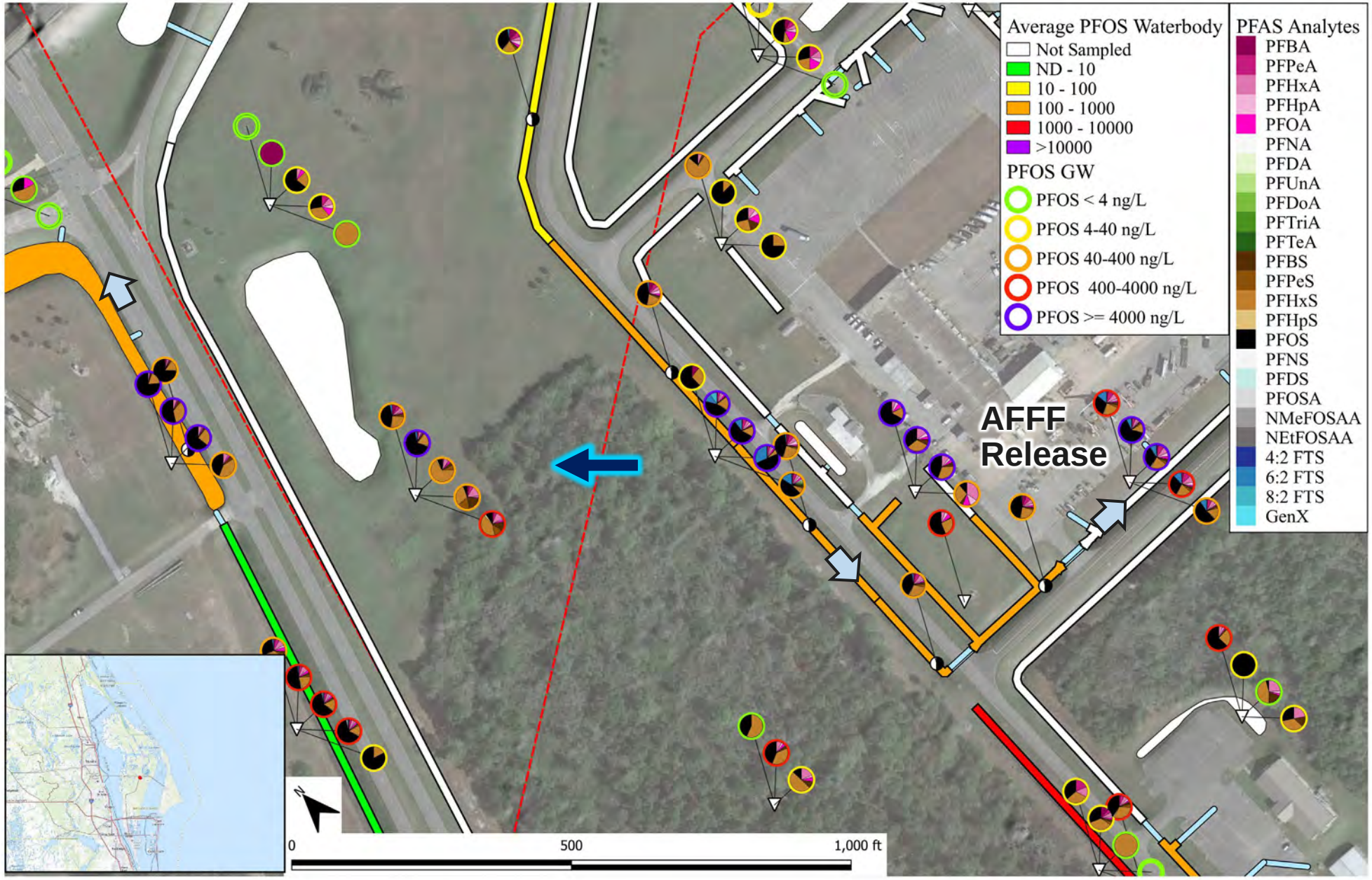
Western Industrial Area:

- All sampled surface water bodies have exceeded the SW SL (10 ng/L) for PFOS.
- PFOS concentrations exceed the SW SL at the point that connects to the stormwater system.

KARS Park II:

- The canal on the east side of KARS Park II is below the SW SL south of contact with the PFOS groundwater plume.
- PFOS concentrations exceed the SW SL north of the contact and west along the south side of Kennedy Parkway to the KSC Visitor Center.
- Before reaching the KSC Visitor Center, PFOS in surface water appears to be discharging back to groundwater.

PFAS Ratios



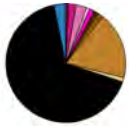
SW flow direction

GW flow direction

AFFF release, shallow GW



Intermediate GW along GW flow path

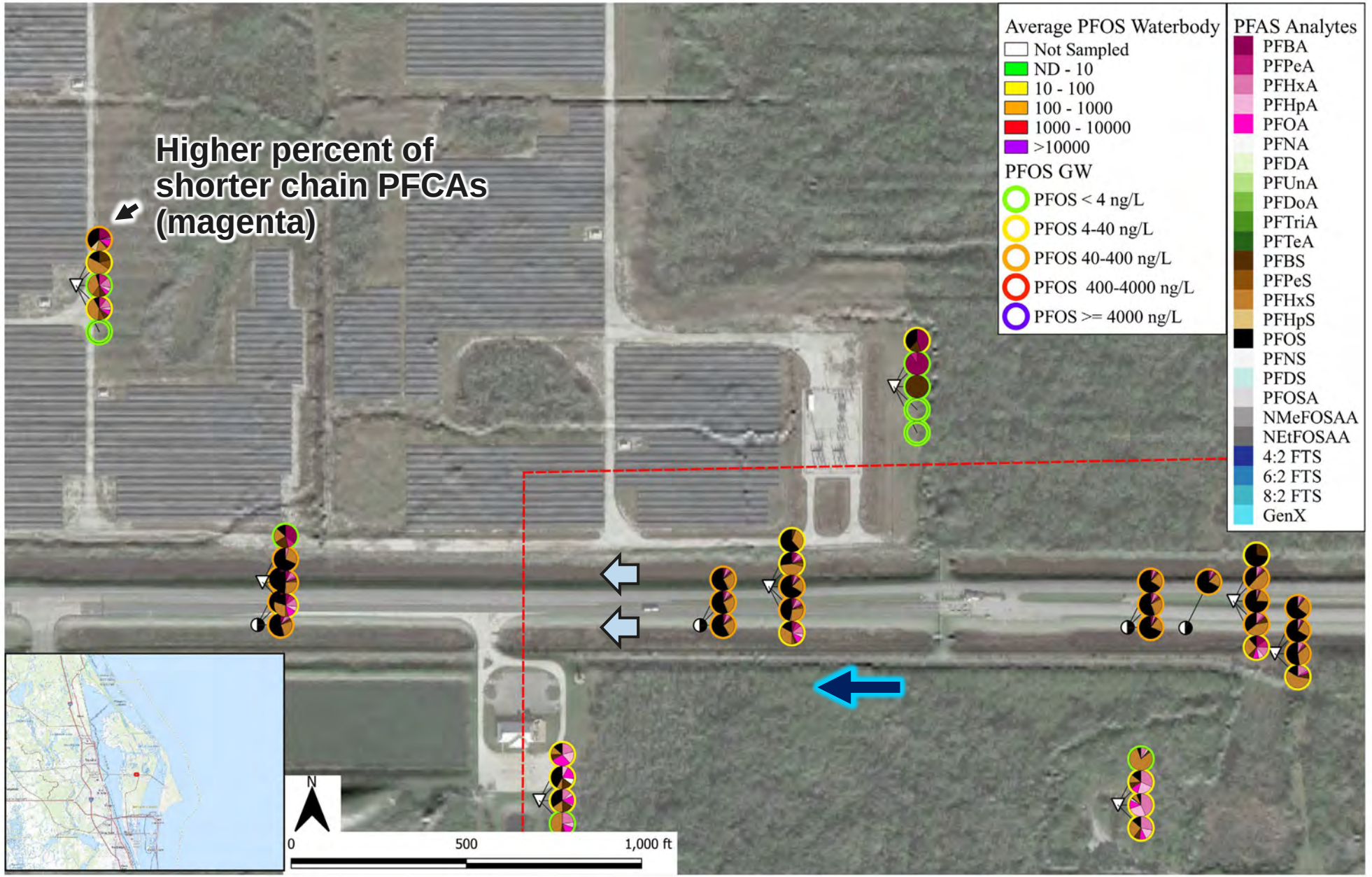


Shallow GW adjacent to SW



Surface water and groundwater signatures with the highest concentrations tend to resemble clusters identified by AECOM, 2021 for legacy AFFF with PFOS > PFHxS. Some locations with higher PFHxS than PFOS are similar to those for modern AFFF.

PFAS Ratios



SW flow direction

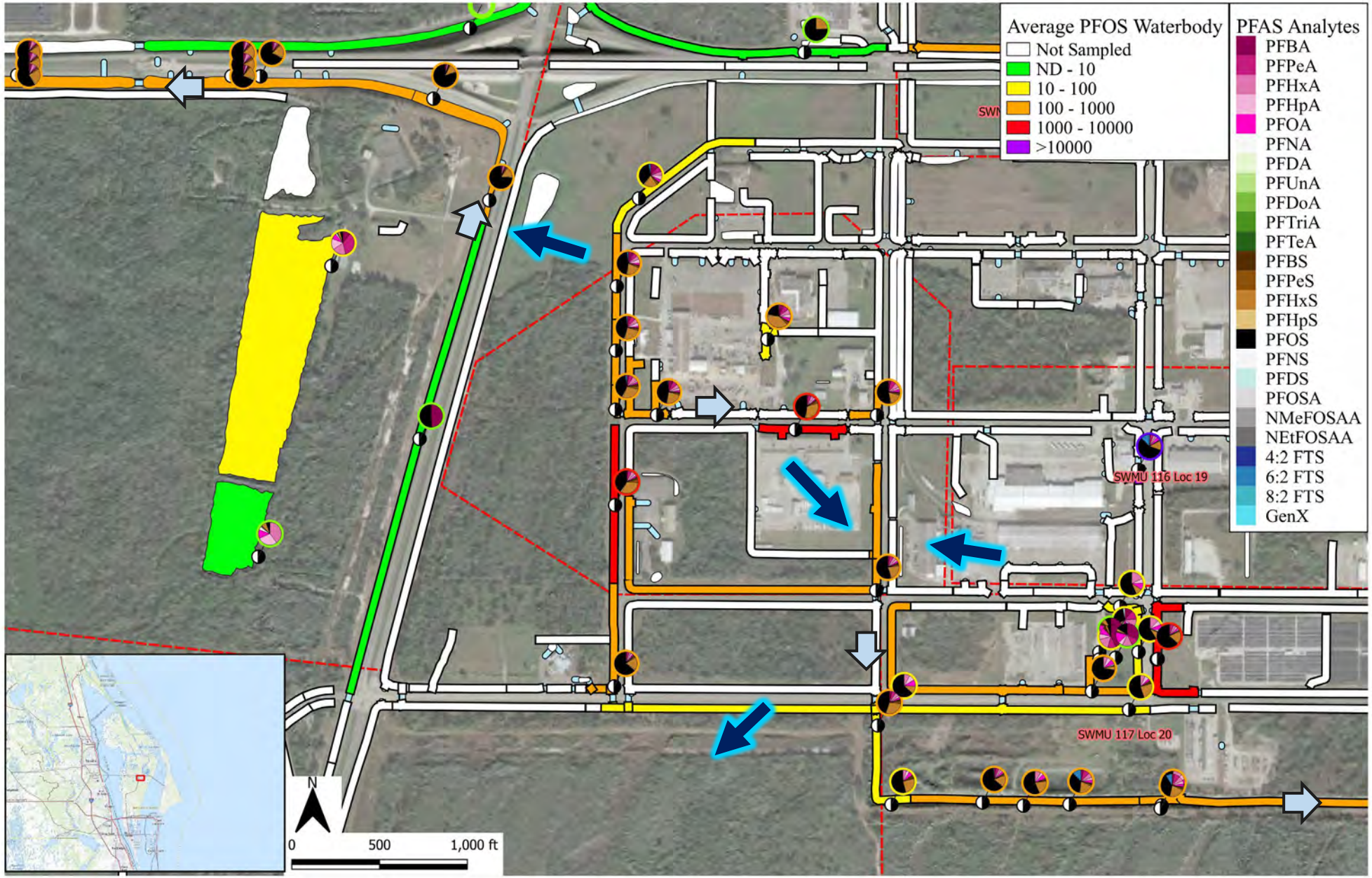
GW flow direction

SW west of Kennedy Pkwy

SW south of NASA Pkwy

Shallow GW along NASA Pkwy

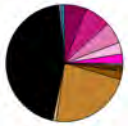
PFAS Ratios



SW flow direction

GW flow direction

SW at SWMU 014

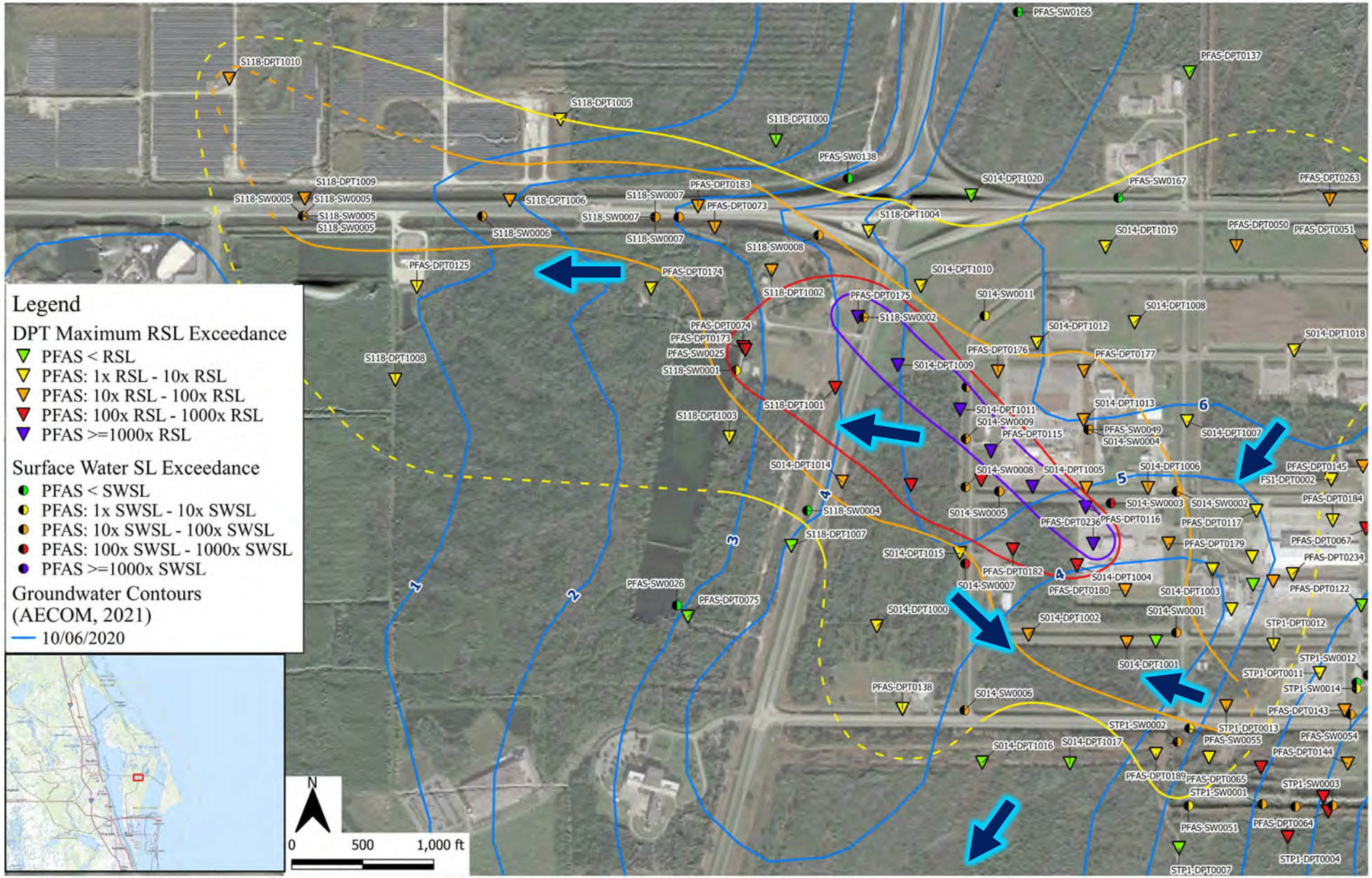


SW along NASA Pkwy



SW southeast of SWMU 014 (water from Multiple SWMUs)





PFAS Exceeding EPA RSLs and FDEP SW Screening Levels

GW flow direction

Groundwater contours based on wells screened at depths ranging from water table to 40 feet bls (above retarding unit)

May 2022 EPA RSLs:
PFOA: 6 ng/L
PFNA: 6 ng/L
PFBS: 600 ng/L
PFHxS: 40 ng/L
PFOS: 4 ng/L

FDEP 2020 Surface Water Screening Levels:
PFOA: 500 ng/L
PFOS: 10 ng/L



PFAS Exceeding EPA RSLs and FDEP SW Screening Levels

May 2022 EPA RSLs:

PFOA: 6 ng/L

PFNA: 6 ng/L

PFBS: 600 ng/L

PFHxS: 40 ng/L

PFOS: 4 ng/L

FDEP 2020 Surface Water Screening Levels:

PFOA: 500 ng/L

PFOS: 10 ng/L

Summary

Groundwater:

- A single PFAS groundwater plume covers SWMU 014 and SWMU 118.
- To date, one source area has been identified. Other potential sources may exist.
- The PFAS plume appears comingled with multiple other SWMU plumes to the east and remains undefined to the south and east. The plume has not been delineated vertically and extends to a depth of at least 55 feet. Boring logs indicate that the silt, shell and/or clay extends to a depth of at least 60 feet. This layer may serve as a retarding unit.

Surface Water:

- All sampled surface water bodies in the western Industrial Area have exceeded the SWSL for PFOS. PFOS concentrations exceed the SWSLs at points that connect to multiple stormwater canals in the Western Industrial Area and at the canal of the east and north sides of KARS Park II.
- The PFOS groundwater plume appears to be discharging PFOS to the canal on the east and north sides of KARS Park II.
- Evidence of PFOS in groundwater discharging to surface water and PFOS in surface water discharging to groundwater has been observed.

2023 Investigation Focus

- The 2023 SLF PFAS investigation will treat KARS Park II and the Base Support Building a single study area (Western Industrial Area).
- The primarily focus on the 2023 investigation will be on groundwater/surface water interactions.
- 2023 activities will include DPT groundwater sampling, monitoring well installation and sampling, staff gauge installations and surface water sampling.
- On a quarterly basis; water level measurements, staff gauge readings, surface water and groundwater samples will be collected from select locations.

2023 Sample Locations

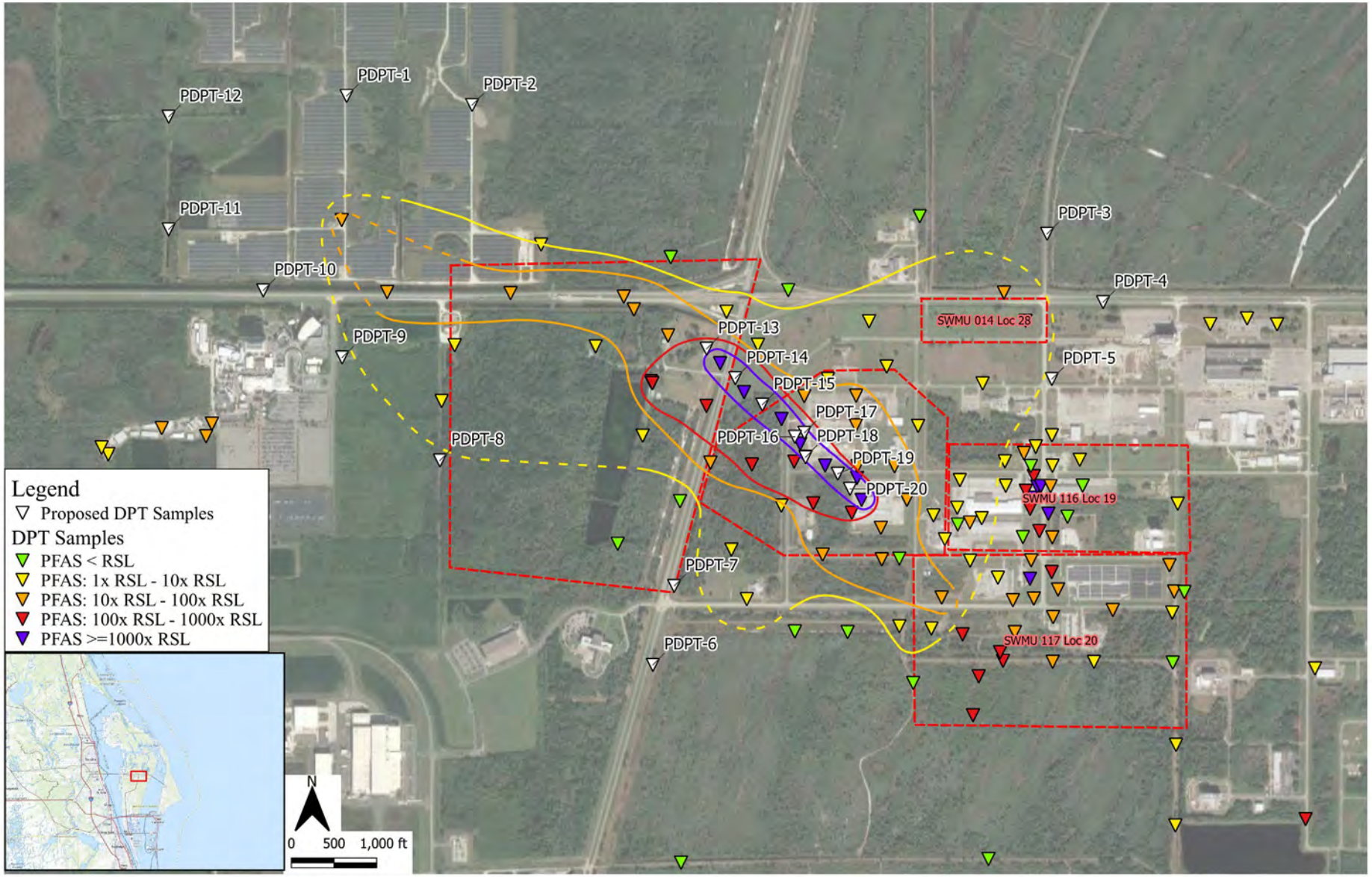


Legend

- Industrial Area Shallow Well for Quarterly Water Level Measurements
- Proposed Shallow (WT-1' + 10') and Intermediate Well (30'-35') Location
- Proposed Monitoring Wells for Quarterly Sampling
- Proposed Staff Gauge Location
- Proposed Quarterly Surface Water Sample

Additional DPT Groundwater and Surface Water Sample locations will be determined after well installations and sampling, and the first quarterly sampling event.

2023 Sample Locations



Additional DPT Groundwater and Surface Water Sample locations will be proposed after well installations and sampling, and the first quarterly sampling event.

- Questions?

APPENDIX C

Field Documentation

SWMU 014 Field Documentation

Daily Quality Control Report

HGL HydroGeoLogic, Inc. Exceeding Expectations	Daily Quality Control Report
Date:	**2/17/2022**
NASA Remediation Project Manager	Deda Johansen
HGL Program Manager:	Richard Smith
HGL Project Manager:	Richard Smith
Prime Contract No.	80KSC019D0012
Project Name:	SWMU #014
Project No.	NS1010.01.12

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	68	79

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Howard Fowler	Senior Scientist	SWMU 114/118	8		8
TOTAL HGL PERSONNEL ONSITE		3	TOTAL HOURS WORKED		8

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		1		0

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Jeff Zeigler	DrillPro	SWMU 014	8		8
Dave Longino	DrillPro	SWMU 014	8		8
Colten Hinsk	DrillPro	SWMU 014	8		8
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		0	TOTAL HOURS WORKED		24

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
DPT Rig	02/16/22	02/17/22	8		

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Soil Borings	C	Advanced 2 soil borings to 60' for lithologic description

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Analysis	Results - Detected / Not Detected

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

TGSM - Drill rig safety, housekeeping

6. Description of Work Completed

SWMU #014: Advanced 2 lithologic boring (S014-LB01 and S014-LB02) to 60 feet with sonic rig for lithologic description. IDW placed in drum.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Howard Fowler	**2/17/2022**
Signature:	**2/17/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**2/17/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.02.23 08:29:36 -05'00'	**2/17/2022**

HGL HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: SWMU 014

Make/Model Number: GEOPROBE 8140LS

Equipment Number: 185

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.		Tracks in good condition.	✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	✓	Tires fully inflated and in good condition.	N/A
Rig controls clearly labeled and in working condition.	✓	Back-up alarm working.	N/A
Rig Kill Switch in working order.	✓	First Aid Kit accessible and stocked.	✓
All of the Rig's connections tightened and leak-free.	✓	Fire Extinguisher accessible and fully charged.	✓
Parking brake functions properly.	N/A	Eye Wash full and accessible.	✓
Steering controls in working order and clear of obstacles.	✓	Hearing protection available and is being used during hammering.	✓
Copy of the manual for all drilling equipment available.	✓	All overhead and underground hazards identified.	✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: Date: 2/17/22

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-17-22 8:00 Client: NASA/HSC

Location: SWMU 014 Job No.: NS1010.01.12

Meeting/training conducted by: Howard Fowler

Work Activities: Soil Borings

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Drill rig slips, trips & falls

Specific Safety Topic(s): House Keeping, Drill rig safety

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
Dave Longino	
Colton Hirst	
Jeff Zeigler	

BORING LOG

Boring/Well Number: S014-LB01	Permit Number:		FDEP Facility Identification Number:
Site Name: SWMU 014	Borehole Start Date: 02/17/22 End Date: 02/17/22	Borehole Start Time: 8:05 ☑ AM ☐ PM End Time: 10:15 ☑ AM ☐ PM	
Environmental Contractor: HGL	Geologist's Name: Howard Fowler		Environmental Technician's Name:
Drilling Company: DrillPro	Pavement Thickness (inches): NA	Borehole Diameter (inches): 4	Borehole Depth (feet): 60
Drilling Method(s):	Apparent Borehole DTW (in feet from soil moisture content): 6	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☑ Drum ☑ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☐ Well ☑ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Hand Auger	Cont.	Cont.					1	(0 - 1'): Brown fine to medium sand	SP	D	
							2	(1' - 5'): Grey fine to medium sand		D	
							3			D	
							4			D	
							5			D	
Sonic Core	5'-10'	4'					6	(5'-8'): Dark brown fine to medium sand with minor silt		S	
							7			S	
							8			S	
							9	(8'-10'): Shell hash with tan fine sand and silt	GM	W	
							10			W	
Sonic Core	10'-20'	8.5'					11	(10' - 15'): Grey green fine sand with shell and minor silt	SW	S	
							12			S	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: 02/17/22
S014-LB01		SWMU 014	End Date: 02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
							13		SW	S	
							14			W	
							15			W	
Sonic Core	10'-20'	8.5'					16	(15' - 32'): Grey green fine sand with minor shell and silt	SP	W	
							17			W	
							18			W	
							19			W	
							20			W	
							21			S	
							22			S	
							23			S	
							24			S	
Sonic Core	20'-30'	9'					25			W	
							26			W	
							27			W	
							28			W	
							29			W	
							30			W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
S014-LB01		SWMU 014	02/17/22
			End Date: 02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
							31		SP	S	
							32			S	
							33	(32' - 34'): Green grey slightly clayey sand with minor shell	SC	S	
							34			S	
Sonic Core	30'-40'	8'					35	(34' - 38'): Shell hash with grey green fine sand	GW	W	
							36			W	
							37			W	
							38			W	
							39	(38' - 40'): Grey green fine to medium sand with abundant shell.	SW	W	
							40			W	
Sonic Core	40'-50'	10'					41	(40' - 50'): Grey green fine sand with minor shell.	SP	S	
							42			S	
							43			S	
							44			W	
							45			W	
							46			W	
							47			W	
							48			W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: 02/17/22
S014-LB01		SWMU 014	End Date: 02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	40'-50'	10'					49		SP	W	
							50			W	
							51	(50' - 57'): Grey green fine to medium sand with shell.	SW	S	
							52			S	
							53			S	
							54			S	
Sonic Core	50'-60'	7'					55			S	
							56			S	
							57			S	
							58	(57' - 60'): Grey green slightly clayey silt with minor shell.	ML	W	
							59			W	
							60			W	
							61				
							62				
							63				
							64				
							65				
							66				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number: S014-LB02	Permit Number:		FDEP Facility Identification Number:
Site Name: SWMU 014	Borehole Start Date: 02/17/22 End Date: 02/17/22	Borehole Start Time: 12:30 ☐ AM ☑ PM End Time: 2:35 ☐ AM ☑ PM	
Environmental Contractor: HGL	Geologist's Name: Howard Fowler		Environmental Technician's Name:
Drilling Company: DrillPro	Pavement Thickness (inches): NA	Borehole Diameter (inches): 4	Borehole Depth (feet): 60
Drilling Method(s):	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☑ Drum ☑ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☐ Well ☑ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Hand Auger	Cont.	Cont.					1	(0 - 1'): Brown fine to medium sand	SP	D	
							2	(1' - 3'): Grey fine to medium sand		D	
							3			M	
							4	(3' - 5'): Grey-brown fine to medium sand		S	
							5			S	
Sonic Core	5'-10'	4'					6	(5'-6'): Dark brown fine to medium sand with minor silt		W	
							7	(6'-8'): Tan-white fine to medium sand with shell	SW	W	
							8			W	
							9	(8'-18'): Grey fine sand with shell and minor silt		W	
							10			W	
Sonic Core	10'-20'	10'					11			W	
							12			W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:	02/17/22
S014-LB02		SWMU 014	End Date:	02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	10'-20'	10'					13		SW	W	
							14			W	
							15			W	
							16			W	
							17			W	
							18			W	
							19	(18'-20'): Grey fine sand with minor shell and silt	SP	W	
							20			W	
Sonic Core	20'-30'	10'					21	(20'-30'): Grey fine sand with minor shell		W	
							22			W	
							23			W	
							24			W	
							25			W	
							26			W	
							27			W	
							28			W	
							29			W	
							30			W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:	02/17/22
S014-LB02		SWMU 014	End Date:	02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
							31	(30'-35'): Grey green fine to medium sand with shell	SW	S	
							32			S	
							33			S	
							34			S	
Sonic Core	30'-40'	9'					35			W	
							36	(30'-35'): Grey fine sand with minor shell	SP	W	
							37			W	
							38			W	
							39			W	
							40			W	
							41	(40' - 46'): Grey fine sand with shell.	SW	S	
							42			S	
							43			S	
Sonic Core	40'-50'	10'					44			W	
							45			W	
							46			W	
							47	(46' - 47'): Grey-green clay, very soft	CH	W	
							48	(47' - 55'): Grey-green silt	ML	W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: 02/17/22
S014-LB02		SWMU 014	End Date: 02/17/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	40'-50'	10'					49		ML	W	
							50			W	
							51				
							52				
							53				
							54				
Sonic Core	50'-60'	5'					55				
								(55' - 58'): Grey-green silt	ML	W	
							56				
							57			W	
							58			W	
								(58' - 60'): Shell hash with grey-green silt	GM	W	
							59				
							60			W	
							61				
							62				
							63				
							64				
							65				
							66				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

KSC/NASA SWMU 014 2.17.22

7:45 Howard Fowler and Drill Pro (Dave Longino, Jeff Zeigler, Colten Hirst on site to advance 2 lithologic soil borings to 60'. Set up on SO14-LB01 (SE corner of GSA) 68°, clear skies, NW wind

8:00 Conduct TSM. Discuss housekeeping and drill rig safety.

8:05 Begin hand clearing to 5'

8:15 Begin advancing boring with sonic rig

9:05 reach 30' depth

10:15 reach 60' depth. Drillers begin grouting borehole

10:35 complete grouting. Drillers clean up site.

11:00 mobilize to SO14-LB02

11:25 Drillers off site to get water And lunch

12:30 Drillers return from lunch, Begin hand clearing

12:35 Begin Advancing SO14-LB02 with sonic rig

13:25 Reach 30' depth

14:35 Reach 60' depth. Drillers begin grouting up borehole. Lithology entered on Soil Boring Log

14:55 Drillers complete grouting of borehole. Begin cleaning up site.

- 1 Drum of soil IDW generated.

15:40 Off site

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**2/22/22 - 2/23/22**
NASA Remediation Project Manager:	Ryan O'Meara / Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.13

Day	**S**	**M**	**T**	**W**	**TH**	**F**	**S**
			X	**X**			

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	61			79			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Field Technician	SLF/KP2/M&O	9.5	0	9.5
William Duttenhaver	Field Technician	SLF/KP2/M&O	8.5	0	8.5
Gary Parker	Field Technician	SLF	1	0	1
TOTAL HGL PERSONNEL ONSITE		**3**	**TOTAL HOURS WORKED**		**19**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collected Surface Water Samples	**S/F**	Collected surface water samples from various locations at SWMU 114, 014, and 118.

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S114-SW0001-000.0-20220222	0835	PFAS/PFOA	Pending
S114-SW0002-000.0-20220222	0900		
S114-SW0003-000.0-20220222	0930		
S114-SW0004-000.0-20220222	0940		
S114-SW0005-000.0-20220222	1000		
S114-SW0006-000.0-20220222	1020		
S114-SW0007-000.0-20220222	1040		
S114-SW0008-000.0-20220222	1050		
S114-SW0009-000.0-20220222	1115		
S114-SW0010-000.0-20220222	1140		
S114-FD-20220222-02	1140		
S114-SW0011-000.0-20220222	1155		
S114-SW0012-000.0-20220222	1205		
S114-SW0013-000.0-20220222	1220		
S114-SW0014-000.0-20220222	1255		
S114-EB-20220222	1300		
S118-SW0001-000.0-20220222	1345		
S118-SW0002-000.0-20220222	1435		
S118-FD-20220222-01	1435		
S118-SW0003-000.0-20220222	1450		
S118-SW0004-000.0-20220222	1500		
S118-FB-20220222-01	1505		
S118-EB-20220222-01	1510		
S014-SW0001-000.0-20220222	1530		
S014-SW0002.000.0-20220222	1535		
S014-SW0003-000.0-20220222	1550		
S014-FD-20220222-01	1550		
S014-SW0004-000.0-20220222	1600		
S014-SW0005-000.0-20220222	1615		
S014-FB-20220222-01	1620		
S014-EB-20220222-01	1625		
S114-SW0015-000.0-20220223	1600		
S114-FD-20220223-01	1600		
S114-FB-20220223-01	1610		
S114-EB-20220223-01	1615		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls, Struck By.

Daily Quality Control Report

6. Description of Work Completed

0730 - Arrive on site at SLF. Conducted TGSM. Gathered sampling gear from Jason B. Mob to SLF Apron Facility and retrieve radio before entering the landing strip.

0835 - Collected sample S114-SW0001-000.0-20220222 (Former SW-1). No water flow observed. Water is 2-3' deep upon collection (could not tell due to brackish water).

0900 - Collected sample S114-SW0002-000.0-20220222 (SW-7). Water flowing north. 3'+ deep upon collection (brackish water).

0930 - Collected sample S114-SW0003-000.0-20220222 (PFAS-SW0011). No water flow observed. 1-2' deep upon collection (brackish water).

0940 - Collected sample S114-SW0004-000.0-20220222 (PFAS-SW0012). Water flowing southwest. 3' deep upon collection (brackish water).

1000 - Collected sample S114-SW0005-000.0-20220222 (PFAS-SW0035). Water flowing to the north. 3' deep upon collection (brackish water). Contacted SLF tower for access to landing strip.

1020 - Collected sample S114-SW0006-000.0-20220222 (PFAS-SW0034). Water flowing to the north. 2' deep upon collection (brackish water).

1040 - Collected sample S114-SW0007-000.0-20220222 (SW-6). Water flowing to the north. 2' deep upon collection (brackish water). Noted: heavy vegetation near sample location.

1050 - Collected sample S114-SW0008-000.0-20220222 (SW-5). Water flowing to the northwest. 1-2' deep upon collection (brackish water). Noted: heavy vegetation near sample location.

1115 - Collected sample S114-SW0009-000.0-20220222 (PFAS-SW0062). No water flow observed. 1-2' deep upon collection (brackish water). Noted: vegetation near sample location.

1140 - Collected sample S114-SW0010-000.0-20220222 and FD-02 (PFAS-SW0013). Water flowing to the west. 1-2' deep upon collection (brackish water).

1155 - Collected sample S114-SW0011-000.0-20220222 (PFAS-SW0014). Water flowing to the west. 1-2' deep upon collection (brackish water).

1205 - Collected sample S114-SW0012-000.0-20220222 (PFAS-SW0016). Water flowing to the west. 1-2' deep upon collection (brackish water).

1220 - Collected sample S114-SW0013-000.0-20220222 (PFAS-SW0017). Water flowing to the west. 1-2' deep upon collection (brackish water).

1255 - Collected sample S114-SW0014-000.0-20220222 (SW-2). No water flow observed. 1' deep upon collection. Noted: could not access proposed sample location due to heavy vegetation overgrowth. Collected sample approximately 200' north of proposed location. Collected GPS location 30' north of sample location on pathway.

1300 - Collected sample S114-EB-20220222-01. Mob to KARS Park II (SWMU S118).

1345 - Collected sample S118-SW0001-000.0-20220222 (PFAS-SW0025). Water flowing to north. 4-5' deep upon collection (clear water).

1435 - Collected sample S118-SW0002-000.0-20220222 and FD-01 (SW-4). No water flow observed. 1' deep upon collection (brackish water).

1450 - Collected sample S118-SW0003-000.0-20220222 (PFAS-SW0059). Noted: no water flow and there was vegetation around the sample location.

1500 - Collected sample S118-SW0004-000.0-20220222 (SW-3). Noted: no water flow and there was vegetation around the sample location.

1505 - Collected sample S118-FB-20220222-01.

1510 - Collected sample S118-EB-20220222-01. Mob to SWMU 014.

1530 - Collected sample S014-SW0001-000.0-20220222 (SW-10). No water flow observed. 1' deep upon collection (brackish water).

1535 - Collected sample S014-SW0002-000.0-20220222 (SW-9). No water flow observed. 0.5' deep upon collection. Noted: vegetation and brackish water at sample location.

1550 - Collected sample S014-SW0003-000.0-20220222 and FD-01 (SW-8). No water flow observed. 0.5' deep upon collection. Noted: vegetation and brackish at sample location.

1600 - Collected sample S014-SW0004-000.0-20220222 (PFAS-SW0049). 0.5' deep upon collection. No water flow observed. Noted: heavy vegetation and brackish water at sample location.

1615 - Collected sample S014-SW0005-000.0-20220222 (PFAS-SW0048). No water flow observed. 0.5' deep upon collection. Noted: heavy vegetation and brackish water at sample location.

1620 - Collected sample S014-FB-20220222-01.

1625 - Collected sample S014-EB-20220222-01.

1600 - Collected sample S114-SW0015-000.0-20220223 and FD-01. Water flowing to the west. 2' deep upon collection (brackish water).

1610 - Collected sample S114-FB-20220223-01.

1615 - Collected sample S114-EB-20220223-01. All employees mob off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Dustin Lupis	**3/2/2022**
Signature: Dustin Lupis	**3/2/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/2/2022**
Signature:	**3/2/2022**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- ☑ Tailgate (daily)
- ☐ Activity Hazard Analysis
- ☐ Pre-Task Hazard Analysis (prior to new task or operation)
- ☐ Site Safety Orientation (new personnel)
- ☐ Supervisor's (monthly)
- ☐ Supervisor's (weekly)
- ☐ UXO Awareness
- ☐ Asbestos Awareness
- ☐ Health and Safety Plan Addendum: _____
- ☐ Other: ___

Date/Time: 02/22/22 0730 Client: KSC/NASA

Location: SLF, M&O Faci, KARS Park II Job No.: NS1010.01.13

Meeting/training conducted by: Dustin Lupis

Work Activities: Conducted surface water sampling at various locations

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Pinch points, slips, trips, falls, biologicals, COVID-19, traversing to ~~wells~~ locations

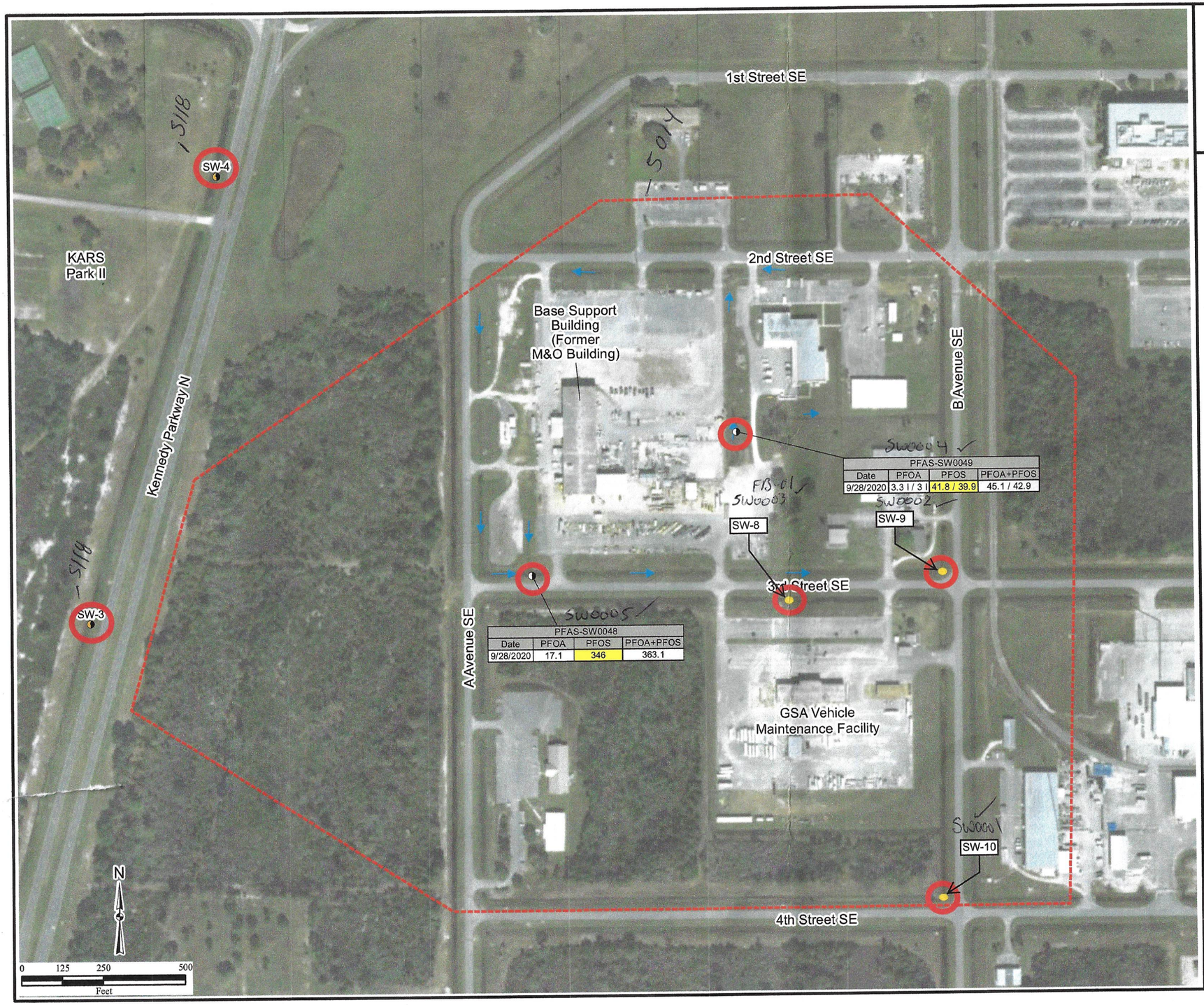
Specific Safety Topic(s): Traversing to surface water sampling locations

Specific Training Covered: Site and situational awareness, watch footing and be mindful of local traffic

Attendees

Name Printed and Employee Number:	Signature:
William Duttenhaver	
Dustin Lupis	

Figure 7
SWMU 014 Base Support Building Surface Water Sample Results Sample Locations



Legend

- Surface Water Sample
- Proposed Surface Water Sample
- Stormwater Flow Direction
- SWMU 014 Boundary
- Proposed Surface Water Sample Location

Notes:
Yellow=greater than SWSL
SWSL for PFOA=500 ng/L
SWSL for PFOS=10 ng/L
Results in nanograms per liter (ng/L)

I=estimated value
PFOS=perfluorooctanesulfonic acid
PFOA=perfluorooctanoic acid
SWSL=surface water screening level
SWMU=solid waste management unit

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10/26/2021 TB
Source: HGL, ArcGIS Online Imagery



Figure 10
SWMU 118 KARS Park II
Surface Water Sample Results/ Proposed Surface Water Sample Locations

Legend

- Surface Water Sample
- Proposed Surface Water Sample
- Stormwater Flow Direction
- SWMU 118 Boundary

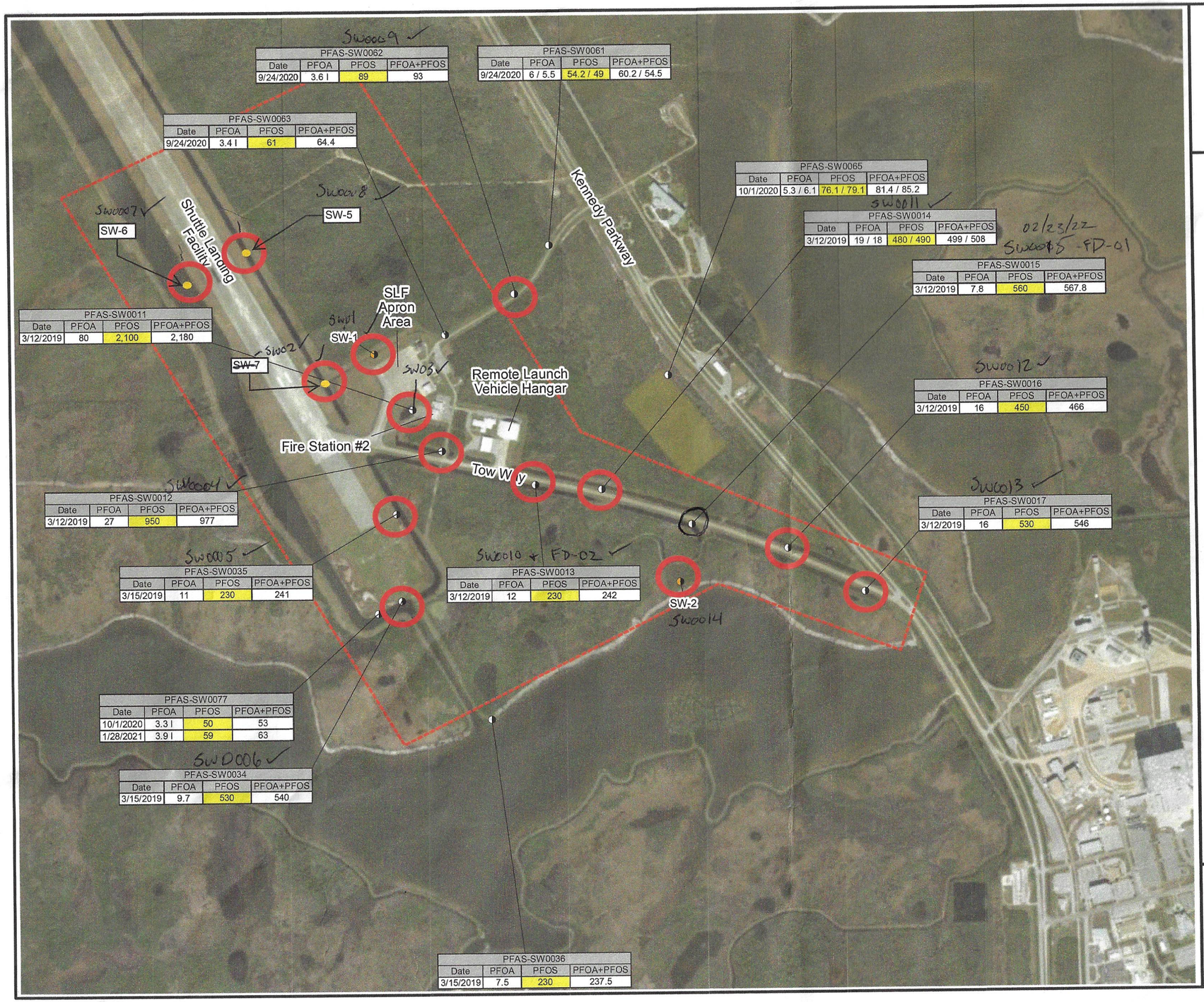
Notes:
Yellow=greater than SWSL
Results in nanograms per liter (ng/L)
SWSL for PFOA=500 ng/L
SWSL for PFOS=10 ng/L

I=estimated value
KARS=Kennedy Athletic, Recreation, and Social
PFOS=perfluorooctanesulfonic acid
PFOA=perfluorooctanoic acid
SWMU=solid waste management unit
SWSL=surface water screening level
U=not detected

- Proposed Surface Water Sample Location

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10/26/2021 TB
Source: HGL, ArcGIS Online Imagery

Figure 4
SWMU 114 Fire Station #2
Surrounding Area
Surface Water Sample Results/ Proposed Surface Water Sample Locations



Legend

- Surface Water Sample
- Proposed Surface Water Sample
- Stormwater Flow Direction
- SWMU 114 Boundary

Notes:
Yellow=exceeds the SWSL
Results in nanograms per liter (ng/L)
SWSL for PFOA=500 ng/L
SWSL for PFOS=10 ng/L

I=Estimated Value
PFOS=perfluorooctanesulfonic acid
PFOA=perfluorooctanoic acid
SWMU=solid waste management unit
SWSL=surface water screening level

- Proposed Surface Water Sample Location

N

0 600 1,200 2,400
Feet

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10/19/2021 TB
Source: HGL, ArcGIS Online Imagery

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 1	Location: SLF SWMU 114 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S114-SW0001 surface water sample location. (SW-1).		



Photograph No.: 2	Location: SLF SWMU 114 Photographer: Dustin Lupis	Direction: Facing Northwest Date: 02/22/2022
Description: Photo of S114-SW0002 surface water sample location. (SW-7).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 3	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S114-SW0003 surface water sample location. (PFAS-SW0011).		



Photograph No.: 4	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing Southwest Date: 02/22/2022
Description: Photo of S114-SW0004 surface water sample location. (PFAS-SW0012).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 5	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing East Date: 02/22/2022
Description: Photo of S114-SW0005 surface water sample location. (PFAS-SW0035).		



Photograph No.: 6	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing East Date: 02/22/2022
Description: Photo of S114-SW0006 surface water sample location. (PFAS-SW0034).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 7	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing West Date: 02/22/2022
Description: Photo of S114-SW0007 surface water sample location. (SW-6).		



Photograph No.: 8	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing East Date: 02/22/2022
Description: Photo of S114-SW0008 surface water sample location. (SW-5).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 9	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S114-SW0009 surface water sample location. (PFAS-SW0062).		



Photograph No.: 10	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing South Date: 02/22/2022
Description: Photo of S114-SW0010 surface water sample location. (PFAS-SW0013).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 11	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S114-SW0011 surface water sample location. (PFAS-SW0014).		



Photograph No.: 12	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S114-SW0012 surface water sample location. (PFAS-SW0016).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 13	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing East Date: 02/22/2022
Description: Photo of S114-SW0013 surface water sample location. (PFAS-SW0017).		



Photograph No.: 14	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing South Date: 02/22/2022
Description: Photo of S114-SW0014 surface water sample location. (SW-2).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 15	Location: SLF SWMU S114 Photographer: Dustin Lupis	Direction: Facing South Date: 02/22/2022
Description: Photo of S114-SW0015 surface water sample location. (PFAS-SW0015).		



Photograph No.: 16	Location: KARS Park II SWMU S118 Photographer: Dustin Lupis	Direction: Facing West Date: 02/22/2022
Description: Photo of S118-SW0001 surface water sample location. (PFAS-SW0025).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 17	Location: KARS Park II SWMU S118 Photographer: Dustin Lupis	Direction: Facing Southwest Date: 02/22/2022
Description: Photo of S118-SW0002 surface water sample location. (SW-4).		



Photograph No.: 18	Location: KARS Park II SWMU S118 Photographer: Dustin Lupis	Direction: Facing West Date: 02/22/2022
Description: Photo of S118-SW0003 surface water sampling location. (PFAS-SW0059).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 19	Location: KARS Park II SWMU S118 Photographer: Dustin Lupis	Direction: Facing Southwest Date: 02/22/2022
Description: Photo of S118-SW0004 surface water sample location. (SW-3).		



Photograph No.: 20	Location: Former M&O Fac. SWMU S014 Photographer: Dustin Lupis	Direction: Facing South Date: 02/22/2022
Description: Photo of S014-SW0001 surface water sample location. (SW-10).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 21	Location: Former M&O Fac. S014 Photographer: Dustin Lupis	Direction: Facing Southwest Date: 02/22/2022
Description: Photo of S014-SW0001 surface water sampling location. (SW-10).		



Photograph No.: 22	Location: Former M&O Fac. SWMU S014 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S014-SW0002 surface water sampling location. (SW-9).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 23	Location: Former M&O Fac. S014 Photographer: Dustin Lupis	Direction: Facing West Date: 02/22/2022
Description: Photo of S014-SW0003 surface water sampling location. (SW-8).		



Photograph No.: 24	Location: Former M&O Fac. SWMU S014 Photographer: Dustin Lupis	Direction: Facing West Date: 02/22/2022
Description: Photo of S014-SW0004 surface water sampling location. (PFAS-SW0049).		

Kennedy Space Center Surface Water Sampling at Various Locations



Photograph No.: 23	Location: Former M&O Fac. S014 Photographer: Dustin Lupis	Direction: Facing North Date: 02/22/2022
Description: Photo of S014-SW0005 surface water sampling location. (PFAS-SW0048)		

Daily Quality Control Report

Daily Quality Control Report	
Date:	**2/25/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	64			81			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Environmental Scientist	S014	7	0	7
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**7**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	7	0	7
Colton Wiegmann-Hinst	DrillPro LLC	S014	7	0	7
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**14**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	2/25/2022	7	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS/PFOA

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1000-005.0-20220225	0754	PFAS/PFOA	Pending
S014-DPT1000-015.0-20220225	0808		
S014-DPT1000-025.0-20220225	0825		
S014-DPT1000-035.0-20220225	0845		
S014-DPT1000-045.0-20220225	0905		
S014-DPT1001-005.0-20220225	1008		
S014-FD-20220225-01	1008		
S014-DPT1001-015.0-20220225	1026		
S014-DPT1001-025.0-20220225	1043		
S014-DPT1001-035.0-20220225	1101		
S014-DPT1001-045.0-20220225	1131		
S014-DPT1002-005.0-20220225	1207		
S014-DPT1002-015.0-20220225	1219		
S014-DPT1002-025.0-20220225	1235		
S014-DPT1002-035.0-20220225	1255		
S014-DPT1002-045.0-20220225	1316		
S118-FB-20220224-01	1336		
S118-EB-20220224-01	1340		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls.

6. Description of Work Completed

0700 - All personnel on-site. Conduct TGSM and rig inspection.

0710 - Unload drill rig from trailer and mob to S014-DPT1000 (**S014-DPT-32 on field figure**). Hand auger to 5' bgs.

0754-0905 - Collect S014-DPT1000-005.0-20220225, S014-DPT1000-015.0-20220225, S014-DPT1000-025.0-20220225, S014-DPT1000-035.0-20220225, and S014-DPT1000-045.0-20220225.

0910 - Drillers pressure grout S014-DPT-1000 boring location, mob drill rig to trail entrance and load drill rig on trailer.

0940 - Mob vehicles and equipment to S014-DPT1001 (**S014-DPT-34 on field figure**).

1000 - Arrive at S014-DPT1001 and hand auger to 5' bgs.

1008-1131 - Collect S014-DPT1001-005.0-20220225, FD, S014-DPT1001-015.0-20220225, S014-DPT1001-025.0-20220225, S014-DPT1001-035.0-20220225, and S014-DPT1001-045.0-20220225.

1135 - Pressure grout S014-DPT1001 boring and load drill rig on trailer.

1150 - Arrive at S014-DPT1002 (**S014-DPT-33 on field figur**e), unload drill rig from trailer and hand auger to 5' bgs.

1207-1316 - Collect S014-DPT1002-005.0-20220225, S014-DPT1002-015.0-20220225, S014-DPT1002-025.0-20220225, S014-DPT1002-035.0-20220225, and S014-DPT1002-045.0-20220225.

1320 - Pressure grout S014-DPT1002 boring and load drill rig on trailer.

1336-1340 - Collect S014-FB-20220225-01 and S014-EB-20220225.

1400 - Mob vehicles and equipment to S014-DPT-29 on field figure.

1420 - Stage trailer for weekend in grassy area in the vicinity of S014-DPT-29.

1430 - All personnel off-site for the day. Jason B. mobs to SLF to off-load contained IDW purge water.

1450 - Jason B. adds ~12 gallons of IDW purge water to drum #221931 on pallet #221932.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**2/25/2021**
Signature:	**2/25/2021**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**2/25/2021**
Signature:	**2/25/2021**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-25-22 / 0700 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Jason Bublik

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Sun Exposure, biologicals

Specific Training Covered: Be mind of Sun exposure when working for extended periods. take breaks when need. Be cautious of biologials in vegetated area. wear PFAS free approved repellant if needed.

Attendees

Name Printed and Employee Number:	Signature:
Jason Bublik	
Colton Hirst	
Aram Garcia	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: 02-25-22 Date:

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PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney PKWY, Ste 203
City: Merrit Island State: FL Zip: 32953
Project Contact: Daisy Rivers Email: DriversC@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: Dustin Lyons Sampler 2:

Project Information

Project Name: SWMU 114 PFAS Assessment
Street: Kennedy Space Center
City: Merritt Island State: FL
Project #: NS1010.01.06
Fax #:
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNA	DI WATER	MEOH	LCQSM537 DOD-FLTGEN-24 analytes	LAB USE ONLY
	SI14-SW0015-000.0-20220223	2/23/22	1600	DL	SW	2		X								X	
	SI14-FD-20220223-01	2/23/22	1600	DL	SW	2		X								X	
	SI14-FB-20220223-01	2/23/22	1610	DL	SW	2		X								X	
	SI14-EB-20220223-01	2/23/22	1615	DL	SW	2		X								X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2/25 1510	2	3		4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

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SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-DPT1000-005.0-20220223	2/23/22	0853	JB	GW	2		X								X	
	S118-DPT1000-015.0-20220223	2/23/22	0906	JB	GW	2		X								X	
	S118-FD-20220223-01	2/23/22	0906	JB	GW	2		X								X	
	S118-DPT1000-025.0-20220223	2/23/22	0925	JB	GW	2		X								X	
	S118-DPT1000-035.0-20220223	2/23/22	0953	JB	GW	2		X								X	
	S118-DPT1000-045.0-20220223	2/23/22	1023	JB	GW	2		X								X	
	S118-DPT1001-005.0-20220223	2/23/22	1201	JB	GW	2		X								X	
	S118-DPT1001-015.0-20220223	2/23/22	1219	JB	GW	2		X								X	
	S118-DPT1001-025.0-20220223	2/23/22	1226	JB	GW	2		X								X	
	S118-DPT1001-035.0-20220223	2/23/22	1258	JB	GW	2		X								X	
	S118-DPT1001-045.0-20220223	2/23/22	1325	JB	GW	2		X								X	
	S118-DPT1002-005.0-20220223	2/23/22	1422	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other

Approved By: / Date:

vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

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Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3		4
Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only: Cooler Temperature (s) Celsius (corrected):

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Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-DPT1002-015.0-20220223	2/23/22	1435	JB	GW	2		X								X	
	S118-DPT1002-025.0-20220223	2/23/22	1451	JB	GW	2		X								X	
	S118-DPT1002-035.0-20220223	2/23/22	1513	JB	GW	2		X								X	
	S118-DPT1002-045.0-20220223	2/23/22	1534	JB	GW	2		X								X	
	S118-FB-20220223-01	2/23/22	1612	JB	WW	2		X								X	
	S118-EB-20220223-01	2/23/22	1618	JB	WW	2		X								X	
	S118-DPT1003-005.0-20220224	2/24/22	0753	JB	GW	2		X								X	
	S118-DPT1003-015.0-20220224	2/24/22	0806	JB	GW	2		X								X	
	S118-DPT1003-025.0-20220224	2/24/22	0823	JB	GW	2		X								X	
	S118-DPT1003-035.0-20220224	2/24/22	0843	JB	GW	2		X								X	
	S118-DPT1003-045.0-20220224	2/24/22	0911	JB	GW	2		X								X	
	S118-FD-20220224-01	2/24/22	0911	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

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- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

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	2-25 1510	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

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Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-DPT1004-005.0-20220224	2/24/22	1011	JB	GW	2		X								X	
	S118-DPT1004-015.0-20220224	2/24/22	1032	JB	GW	2		X								X	
	S118-DPT1004-025.0-20220224	2/24/22	1053	JB	GW	2		X								X	
	S118-DPT1004-035.0-20220224	2/24/22	1202	JB	GW	2		X								X	
	S118-DPT1005-005.0-20220224	2/24/22	1358	JB	GW	2		X								X	
	S118-DPT1005-015.0-20220224	2/24/22	1413	JB	GW	2		X								X	
	S118-DPT1005-025.0-20220224	2/24/22	1429	JB	GW	2		X								X	
	S118-FD-20220224-02	2/24/22	1429	JB	GW	2		X								X	
	S118-DPT1005-035.0-20220224	2/24/22	1449	JB	GW	2		X								X	
	S118-DPT1005-045.0-20220224	2/24/22	1516	JB	GW	2		X								X	
	S118-FB-20220224-01	2/24/22	1540	JB	WW	2		X								X	
	S118-EB-20220224-01	2/24/22	1545	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

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- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

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Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

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SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH-ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1000-005.0-20220225	2/25/22	0754	JB	GW	2		X								X	
	S014-DPT1000-015.0-20220225	2/25/22	0808	JB	GW	2		X								X	
	S014-DPT1000-025.0-20220225	2/25/22	0825	JB	GW	2		X								X	
	S014-DPT1000-035.0-20220225	2/25/22	0845	JB	GW	2		X								X	
	S014-DPT1000-045.0-20220225	2/25/22	0905	JB	GW	2		X								X	
	S014-DPT1001-005.0-20220225	2/25/22	1008	JB	GW	2		X								X	
	S014-FD-20220225-01	2/25/22	1008	JB	GW	2		X								X	
	S014-DPT1001-015.0-20220225	2/25/22	1026	JB	GW	2		X								X	
	S014-DPT1001-025.0-20220225	2/25/22	1043	JB	GW	2		X								X	
	S014-DPT1001-035.0-20220225	2/25/22	1101	JB	GW	2		X								X	
	S014-DPT1001-045.0-20220225	2/25/22	1131	JB	GW	2		X								X	
	S014-DPT1002-005.0-20220225	2/25/22	1207	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
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5 Day
3 Day *RUSH*
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Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
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- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

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Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
O! - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1002-015.0-20220225	2/25/22	1219	JB	GW	2		X								X	
	S014-DPT1002-025.0-20220225	2/25/22	1235	JB	GW	2		X								X	
	S014-DPT1002-035.0-20220225	2/25/22	1255	JB	GW	2		X								X	
	S014-DPT1002-045.0-20220225	2/25/22	1316	JB	GW	2		X								X	
	S014-FB-20220225-01	2/25/22	1336	JB	WW	2		X								X	
	S014-EB-20220225-01	2/25/22	1340	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
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3 Day *RUSH*
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vailable VIA Email or Lablink

Data Deliverable Information

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- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

KSC / NASA - SWMU 118 (KARS) 2/24/22
NS1010.01.03

1230-1300 Unable to produce water at 43'-47' bgs. pull rod out and screen and 15' of rod did not come up. Believed stripped threads caused reason for lose.
1315: Due to time constraint, load rig on trailer and mob to FPL Solar plant to do S118-DPT-11.
1340: Arrive at S118-DPT1005, hand auger to 5' bgs.
1355: Begin purge at S118-DPT1005-005.0 (screen 3'-7' bgs)
1358 Collect S118-DPT1005-005.0-20220224
1410 Begin purge at S118-DPT1005-015.0 (screen 13'-17')
1413 Collect S118-DPT1005-015.0-20220224
1426 Begin purge at S118-DPT1005-025.0 (screen 23'-27')
1429 Collect S118-DPT1005-025.0-20220224 & S118-FD-20220224-02
1446 Begin purge at S118-DPT1005-035.0 (screen 33'-37' bgs)
1449 Collect S118-DPT1005-035.0-20220224
1513: Begin purge at S118-DPT1005-045.0 (screen 43'-47' bgs)
1516 Collect S118-DPT1005-045.0-20220224
1530: Pressure grout boring and mob rig to trailer to load.
1540: Collect S118-FB-20220224-01
1545: Collect S118-EB-20220224-01
1600: Mob vehicles and dall rig to SO14-DPT-32 to stage trailer
Note: Nate Cohen w/ FPL escorted personnel while working at S118-DPT1005 boring.
1615: Stage trailer. All personnel off-site for the day. Jason B. Mobs to SLF to off-load IDW purge water.
1635: Add ~12 gallons to drum # 221931 on pallet # 221932.

KSC / NASA - SWMU 014 (M80) 2/25/22
NS1010.01.03

Purpose: Collect DPT GW sample for PFAS analysis at SWMU 014.
Personnel: Jason B. (HLL) Aaron G & Colton W. (GWP)
Weather: HI-81 LO-64 clear
Equipment: Geoprobe, HDPE tubing, PFAS free water, drum supplies, expendable points, inner rods, portland cement, temporary screen, work trucks.
0700: All personnel on-site. Conduct TGSM & rig inspection.
0710: Unload dall rig and mob to SO14-DPT1000 (SO14-DPT-32 on field figure). Hand auger to 5' bgs.
0751: Begin purge at SO14-DPT1000-005.0 (screen 3'-7' bgs)
0754 Collect SO14-DPT1000-005.0-20220225
0805: Begin purge at SO14-DPT1000-015.0 (screen 13'-17' bgs)
0808: Collect SO14-DPT1000-015.0-20220225
0822 Begin purge at SO14-DPT1000-025.0 (screen 23'-27' bgs)
0825 Collect SO14-DPT1000-025.0-20220225
0842 Begin purge at SO14-DPT1000-035.0 (screen 33'-37' bgs).
0845: Collect SO14-DPT1000-035.0-20220225
0902: Begin purge at SO14-DPT1000-045.0 (screen 43'-47' bgs)
0905: Collect SO14-DPT1000-045.0-20220225
0910: Pressure grout SO14-DPT1000 boring and mob rig to trail entrance to load on trailer.
0940: Mob to SO14-DPT1001 (SO14-DPT-34), hand dall crew
1000: Arrive at SO14-DPT1001, hand auger to 5' bgs.
1005 Begin purge at SO14-DPT1001-005.0 (screen 3'-7' bgs)
1008 Collect SO14-DPT1001-005.0-20220225 & SO14-FD-DPT100 20220225-01
1023 Begin purge at SO14-DPT1001-015.0 (screen 13'-17' bgs)
1026 Collect SO14-DPT1001-015.0-20220225
1040 Begin purge at SO14-DPT1001-025.0 (screen 23'-27' bgs)
1043 Collect SO14-DPT1001-025.0-20220225
1058 Begin purge at SO14-DPT1001-035.0 (screen 33'-37')
1100 Collect SO14-DPT1001-035.0-20220225
1128: Begin purge at SO14-DPT1001-045 (screen 43'-47')

KSC / NASA - SWMU 014 (O&M) 2/25/22
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1050	:	Arrive @ S014-DPT1002 (S014-DPT-33), unload drill rig and hand auger to 5' bgs.
1204	:	Begin purge at S014-DPT1002-005.0 (screen 3'-7' bgs)
1207	:	Collect S014-DPT1002-005.0-20220225
1216		Begin purge at S014-DPT1002-015.0 (screen 13'-17' bgs)
1219		Collect S014-DPT1002-015.0-20220225
1232	:	Begin purge at S014-DPT1002-025.0 (screen 23'-27' bgs)
1235	:	Collect S014-DPT1002-025.0-20220225
1252		Begin purge at S014-DPT1002-035.0 (screen 33'-37' bgs)
1255		Collect S014-DPT1002-035.0-20220225
1313		Begin purge at S014-DPT1002-045.0 (screen 43'-47' bgs)
1316		Collect S014-DPT1002-045.0-20220225
1320	:	Pressure grout S014-DPT1002 boring and load rig on trailer.
1336	:	Collect S014-FB-20220225-01 (field blank)
1340	:	Collect S014-EB-20220225-01 (equipment blank)
1400	:	Mob vehicles & equipment to S014-DPT-29 on field figure.
1420	:	Stage trailer for weekend at S014-DPT-29 location.
1430	:	All personnel off-site for the day. Jason B mobs to SLF to unload IDW purge water.
1450	:	Jason B. adds ~12 gallons of IDW to drum # 221931 on pallet # 221937.



Photo 01. Photo of drill rig and crew at S014-DPT1000.



Photo 02. Photo of drill rig and crew at S014-DPT1001.



Photo 03. Photo of drill rig and crew at S014-DPT1002.

Daily Quality Control Report

Daily Quality Control Report	
Date:	**2/28/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
		X					

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	63	77

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Environmental Scientist	S014	9	0	9
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**9**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	8	0	8
Colton Wiegmann-Hinst	DrillPro LLC	S014	8	0	8
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**16**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	2/28/2022	8	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS/PFOA

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1003-005.0-20220228	0928	PFAS/PFOA	Pending
S014-DPT1003-015.0-20220228	0941		
S014-DPT1003-025.0-20220228	0958		
S014-DPT1003-035.0-20220228	1025		
S014-DPT1003-045.0-20220228	1112		
S014-FD-20220228-01	1112		
PFAS-DPT0180-055.0-20220228	1310		
S014-DPT1004-005.0-20220228	1347		
S014-DPT1004-015.0-20220228	1403		
S014-DPT1004-025.0-20220228	1425		
S014-DPT1004-035.0-20220228	1453		
S014-DPT1004-045.0-20220228	1523		
S014-DPT1005-005.0-20220228	1605		
S014-DPT1005-015.0-20220228	1617		
S014-FD-20220228-02	1617		
S014-FB-20220228-01	1630		
S014-EB-20220228-01	1635		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls.

6. Description of Work Completed

0800 - Jason B. on-site at S014-DPT1003 (**S014-DPT-29 on field figure**).

0850 - Drillers arrive on-site.

0855 - Conduct TGSM and rig inspection.

0905 - Hand auger to 5' bgs at S014-DPT1003.

0928-1112 - Collect S014-DPT1003-005.0-20220228, S014-DPT1003-015.0-20220228, S014-DPT1003-025.0-20220228, S014-DPT1003-035.0-20220228, S014-DPT1003-045.0-20220228, and FD-01.

1115 - Pressure grout S014-DPT1003 boring and load drill rig on trailer.

1130 - Mob vehicles and equipment to PFAS-DPT0180.

1145-1230 - Drillers break for lunch.

1230 - Hand auger to 5' bgs at PFAS-DPT0180.

1310 - Collect PFAS-DPT0180-055.0-20220228.

1315 - Pressure grout PFAS-DPT0180 boring and mob drill rig to S014-DPT1004 (**S014-DPT-30 on field figure**).

1330 - Hand auger to 5' bgs at S014-DPT1004.

1347-1523 - Collect S014-DPT1004-005.0-20220228, S014-DPT1004-015.0-20220228, S014-DPT1004-025.0-20220228, S014-DPT1004-035.0-20220228, and S014-DPT1004-045.0-20220228.

1530 - Pressure grout S014-DPT1004 boring and load drill rig on trailer.

1545 - Arrive at S014-DPT1005 (**S014-DPT-27 on field figure**) and hand auger to 5' bgs.

1605-1617 - Collect S014-DPT1005-005.0-20220228, S014-DPT1005-015.0-20220228, and FD-02.

1620 - Remove rodding from boring and stage drill rig/trailer.

1630-1635 - Collect S014-FB-20220228-01 and S014-EB-20220228-01.

1650 - All personnel off-site for the day. Jason B. mobs to SLF to off-load contained IDW purge water.

1710 - Jason B. adds ~8 gallons of IDW purge water to drum #221931 on pallet #221932. Drum is at ~65% capacity.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**3/2/2021**
Signature:	**3/2/2021**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/2/2021**
Signature:	**3/2/2021**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-28-22 / 0855 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Jasm Bublitz

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Struck by

Specific Training Covered: Be mindful of moving equipment and traffic when working around. Wear appropriate PPE

Attendees

Name Printed and Employee Number:	Signature:
Jasm Bublitz	
Aram Garcia	
Colton Hirst	

KSC / NASA - SWMU 014 (O&M) 2/25/22
NS1010.01.03

1050	:	Arrive @ SO14-DPT1002 (SO14-DPT-33), unload dull rig and hand auger to 5' bgs.
1204	:	Begin purge at SO14-DPT1002-005.0 (screen 3'-7' bgs)
1207	:	Collect SO14-DPT1002-005.0-20220225
1216		Begin purge at SO14-DPT1002-015.0 (screen 13'-17' bgs)
1219		Collect SO14-DPT1002-015.0-20220225
1232	:	Begin purge at SO14-DPT1002-025.0 (screen 23'-27' bgs)
1235	.	Collect SO14-DPT1002-025.0-20220225
1252		Begin purge at SO14-DPT1002-035.0 (screen 33'-37' bgs)
1255		Collect SO14-DPT1002-035.0-20220225
1313		Begin purge at SO14-DPT1002-045.0 (screen 43'-47' bgs)
1316		Collect SO14-DPT1002-045.0-20220225
1320	:	Pressure grout SO14-DPT1002 boring and load rig on trailer.
1336	:	Collect SO14-FB-20220225-01 (field blank)
1340	:	Collect SO14-EB-20220225-01 (equipment blank)
1400	:	Mob vehicles & equipment to SO14-DPT-29 on field figure.
1420	:	Stage trailer for weekend at SO14-DPT-29 location.
1430	:	All personnel off-site for the day. Jason B mobs to SLF to unload IDW purge water.
1450	:	Jason B. adds ~12 gallons of IDW to drum # 221931 on pallet # 221932.

KSC / NASA - SWMU 014 (O&M) 2/28/22
NS1010.01.03

Purpose	:	Continue collection of DPT GW samples at O&M for PFAS/PFOA analysis.
Personnel	:	Jason B. (AECOM), Aram G & Colton W. (GWP).
Equipment	:	Geoprobe, inner/outer DPT rods, expendable points, temporary screen, HDPE tubing, portland cement, work trucks.
Weather	:	HI-77 LO-63 clear
0800	:	Jason B. on-site at SO14-DPT1003 (SO14-DPT-29).
0850	:	Drillers on-site.
0855	:	Conduct TGSM and rig inspection.
0905	:	hand auger to 5' bgs at SO14-DPT1003.
0925	:	Begin purge at SO14-DPT1003-005.0-20220228 (screen 3'-7' bgs)
0928		Collect SO14-DPT1003-005.0-20220228
0938		Begin purge at SO14-DPT1003-015.0 (screen 13'-17' bgs)
0941		Collect SO14-DPT1003-015.0-20220228
0955	:	Begin purge at SO14-DPT1003-025.0 (screen 23'-27' bgs)
0958	:	Collect SO14-DPT1003-025.0-20220228
1022		Begin purge at SO14-DPT1003-035.0 (screen 33'-37' bgs)
1025		Collect SO14-DPT1003-035.0-20220228
1109		Begin purge at SO14-DPT1003-045.0 (screen 43'-47' bgs)
~~1109~~ 1112		Collect SO14-DPT1003-045.0-20220228 & SO14-FD-20220228-01 (field duplicate)
1115	:	Pressure grout SO14-DPT1003 boring and load dull rig on trailer.
1130		Mob to PFAS-DPT0180.
1145	:	Drillers break for lunch.
1230	:	Drillers back on-site. Unload dull rig from trailer. hand auger to 5' bgs at PFAS-DPT0180
1307		Begin purge at PFAS-DPT0180-055.0-20220228 (screen 53'-57' bgs)
1310	:	Collect PFAS-DPT0180-055.0-20220228
1315	.	Pressure grout PFAS-DPT0180 boring and mob rig to SO14-DPT1004 (SO14-DPT-30)
1330	:	hand auger to 5' bgs at SO14-DPT1004.

NASA / KSC - SWMU 014 2/28/22

NS1010.01.03

1400: Begin purge at S014-DPT1004.015.0 (screen 13'-17' bgs)

1403: Collect S014-DPT1004.015.0-20220228

1422: Begin purge at S014-DPT1004-025.0 (screen 23'-27' bgs)

1425: Collect S014-DPT1004-025.0-20220228

1450: Begin purge at S014-DPT1004-035.0 (screen 33'-37' bgs).

1453: Collect S014-DPT1004-035.0-20220228

1520: Begin purge at S014-DPT1004-045.0 (screen 43'-47' bgs)

1523: Collect S014-DPT1004-045.0-20220228

1530 Pressure grout S014-DPT1004 boring and load drill rig on trailer

1545: Arrive at S014-DPT1005-1 (S014-DPT-27) boring and hand auger to 5' bgs.

1602: Begin purge at S014-DPT1005-005.0 (screen 3'-7' bgs)

1605: Collect S014-DPT1005-005.0-20220228

1614 Begin purge at S014-DPT1005-015.0 (screen 13'-17' bgs)

1617 Collect S014-DPT1005-015.0-20220228 &
S014-FD-20220228-02.

1620 Remove rods from boring and stage rig / trailer

1630 Collect S014-FB-20220228-01 (field blank)

1635: Collect S014-EB-20220228-01 (equipment blank).

1650: All personnel off-site: Josue B. rides to SLF to unload IDW purge water.

1710: Add ~ 8 gallons of IDW purge water to drum # 221931 on pallet # 221932. drum at ~ 65% capacity.

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
02-28-22
Operator/Inspector: Date:



Photo 01. Photo of S014-DPT1003 boring location and drill rig being loaded on trailer.



Photo 02. Photo of drill rig and crew at S014-DPT1005.

Daily Quality Control Report

Daily Quality Control Report	
Date:	**3/1/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	**S**	**M**	**T**	**W**	**TH**	**F**	**S**
			X				

Weather	Bright Sun	Clear	Overcast	Rain	Fog
			X		

Temp	Min.	Max.
	61	73

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Environmental Scientist	S014	10	0	10
Robert Lynch	Environmental Scientist	S014	3	0	3
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**13**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	10	0	10
Colton Wiegmann-Hinst	DrillPro LLC	S014	10	0	10
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**20**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/1/2022	10	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS/PFOA

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1005-025.0-20220301	0755	PFAS/PFOA	Pending
S014-DPT1005-035.0-20220301	0821		
S014-DPT1005-045.0-20220301	0847		
S014-DPT1006-005.0-20220301	0945		
S014-DPT1006-015.0-20220301	0957		
S014-DPT1006-025.0-20220301	1016		
S014-DPT1006-035.0-20220301	1045		
S014-DPT1006-045.0-20220301	1112		
S014-DPT1007-005.0-20220301	1248		
S014-DPT1007-015.0-20220301	1301		
S014-DPT1007-025.0-20220301	1315		
S014-FD-20220301-01	1315		
S014-DPT1007-035.0-20220301	1343		
S014-DPT1007-045.0-20220301	1412		
S014-DPT1008-007.0-20220301	1500		
S014-DPT1008-015.0-20220301	1511		
S014-DPT1008-025.0-20220301	1528		
S014-DPT1008-035.0-20220301	1548		
S014-DPT1008-045.0-20220301	1611		
S014-FB-20220301-01	1645		
S014-EB-20220301-01	1650		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls.

6. Description of Work Completed

0700 - All personnel on-site. Conduct TGSM and rig inspection.

0710 - Colton W. (Driller helper) not prepared for work, missing PPE. Drillers off-site to Colton PPE.

Note: Check dig status on KSC EPR website. Borings in Cat A are clear to dig and borings in Cat B are no dig. Only working boring in Cat A for the day.

0740 - Drillers back on-site and begin drilling to 23'-27' bgs at S014-DPT1004.

0755-0847 - Collect S014-DPT1005-025.0-20220301, S014-DPT1005-035.0-20220301, and S014-DPT1005

0850 - Pressure grout S014-DPT1005 boring and load drill rig on trailer.

0920 - Mob to S014-DPT1006 (**S014-DPT-28 on field figure**).

0928 - Arrive at S014-DPT1006 location and hand auger to 5' bgs.

0945-1112 - Collect S014-DPT1006-005.0-20220301, S014-DPT1006-015.0-20220301, S014-DPT1006-025.0-20220301, S014-DPT1006-035.0-20220301, and S014-DPT1006-045.0-20220301.

1115 - Pressure grout S014-DPT1006 boring location and load drill rig on trailer.

1140-1225 - Drill take lunch break and meet with other drill crew on center to gather additional supplies.

1230 - Unload drill rig from trailer at S014-DPT1007 (**S014-DPT-25 on field figure**) and hand auger to 5' bgs.

1248-1412 - Collect S014-DPT1007-005.0-20220301, S014-DPT1007-015.0-20220301, S014-DPT1007-025.0-20220301, and FD-01, S014-DPT1007-035.0-20220301, and S014-DPT1007-045.0-20220301.

1420 -Pressure grout S014-DPT007 boring and load drill rig on trailer.

1430 - Arrive at S014-DPT1008 (**S014-DPT-24 on field figure**) and hand auger to 5' bgs.

1500-1611 - Collect S014-DPT1008-007.0-20220301, S014-DPT1008-015.0-20220301, S014-DPT1008-025.0-20220301, S014-DPT1008-035.0-20220301, and S014-DPT1008-045.0-20220301.

1620 - Pressure grout S014-DPT1008 boring and load drill rig on trailer.

1645-1650 - Collect S014-FB-20220228-01 and S014-EB-20220228-01.

1700 - All personnel off-site for the day. Jason B. mobs to SLF to off-load contained IDW purge water.

1715 - Jason B. adds ~12 gallons of IDW purge water to drum #221931 on pallet #221932.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**3/2/2021**
Signature:	**3/2/2021**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/2/2021**
Signature:	**3/2/2021**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 3-1-22 / 0700 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Jasun Bublitz

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Traffic

Specific Training Covered: Be mindful of moving vehicles/traffic when working areas near roadways/parking areas.

Attendees

Name Printed and Employee Number:	Signature:
Jasun Bublitz	
Cran Garcia	
Colton Kinst	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

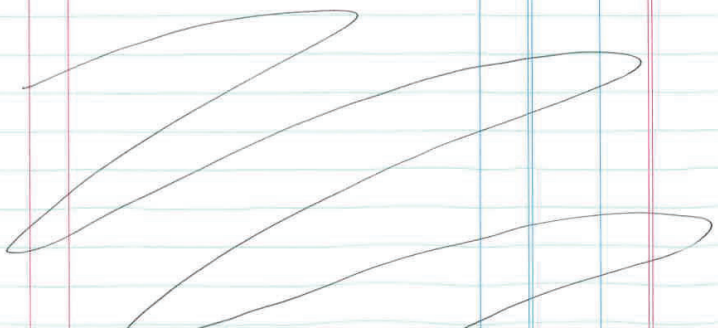
√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
03-01-22
Operator/Inspector: Date:

NASA / KSC - SWMU 014 2/28/22
NS1010.01.03

1400: Begin purge at S014-DPT1004.015.0 (screen 13'-17' bgs)
1403: Collect S014-DPT1004.015.0 - 20220228
1422: Begin purge at S014-DPT1004-025.0 (screen 23'-27' bgs)
1425: Collect S014-DPT1004-025.0-20220228
1450: Begin purge at S014-DPT1004-035.0 (screen 33'-37' bgs)
1453: Collect S014-DPT1004-035.0-20220228
1520: Begin purge at S014-DPT1004-045.0 (screen 43'-47' bgs)
1523: Collect S014-DPT1004-045.0-20220228
1530 Pressure grout S014-DPT1004 boring and load drill rig on trailer
1545: Arrive at S014-DPT1005-1 (S014-DPT-27) boring and hand auger to 5' bgs.
1602: Begin purge at S014-DPT1005-005.0 (screen 3'-7' bgs)
1605: Collect S014-DPT1005-005.0-20220228
1614 Begin purge at S014-DPT1005-015.0 (screen 13'-17' bgs)
1617 Collect S014-DPT1005-015.0-20220228 &
S014-FD-20220228-02.
1620: Remove rods from boring and stage rig / trailer
1630 Collect S014-FB-20220228-01 (field blank)
1635: Collect S014-EB-20220228-01 (equipment blank).
1650: All personnel off-sit. Josan B. mobs to SCF to unload IDW purge water
1710: Add ~8 gallons of IDW purge water to drum # 221931 on pallet # 221932. Drum at ~65% capacity.



NASA / KSC - SWMU 014 3/1/22
NS1010.01.03

Purpose: Collect DPT GW samples at SWMU 014 for PFAS analysis.
Personnel: Josan B. (HGL) Arcen G. & Colton W (CGWP)
Equipment: Geoprobe, inner/outer DPT rods, HDPE tubing, silicon tubing, Peristaltic pump, expendable points, portland cement, work trucks.
Weather: 111-73 LO-61 overcast
0700: All personnel on-sit. Conduct TGSM and rig inspection
0710: Colton W (Driller helper) not prepared for work, missing PPE. Drillers off-sit to get Colton proper PPE.
Note: Check dig status on KSC EPR website. Locations CAT A clear to dig, locations on CAT B are no dig. Will be working locations in CAT A only.
0740: Drillers back on-sit. Begin drilling to 23'-27' bgs at S014-DPT1004.
0752: Begin purge at S014-DPT1005-025.0 (screen 23'-27' bgs)
0755 Collect S014-DPT1005-025.0-20220301
0818 Begin purge at S014-DPT1005-035.0- (screen 33'-37' bgs)
0821 Collect S014-DPT1005-035.0-20220301
0844 Begin purge at S014-DPT1005-045.0 (screen 43'-47')
0847 Collect S014-DPT1005-045.0-20220301
0850: Pressure grout S014-DPT1005 boring and load rig on trailer.
0920: Mob to S014-DPT1006-(S014-DPT-28).
0928: Arrive at S014-DPT1006 location and hand auger to 5' bgs.
0942 Begin purge at S014-DPT1006-005.0 (screen 3'-7' bgs).
0945 Collect S014-DPT1006-005.0-20220301.
0954 Begin purge at S014-DPT1006-015.0 (screen 13'-17' bgs)
0957 Collect S014-DPT1006-015.0-20220301
1013: Begin purge at S014-DPT1006-025.0 (screen 23'-27')
1016: Collect S014-DPT1006-025.0-20220301
1042 Begin purge at S014-DPT1006-035.0 (screen 33'-37' bgs)
1045 Collect S014-DPT1006-035.0-20220301
1109: Begin purge at S014-DPT1006-045.0 (screen 43'-47' bgs)

NASA / KSC - Swmu 014 3/1/22
NS1010.01.03

1140-1225	Drillers take lunch break and meet other driller on KSC property to get additional materials.
1230	Unload drill rig at S014-DPT1007 (S014-DPT-25) and hand auger to 5' bgs.
1245	Begin purge S014-DPT1007-005.0 (screen 3'-7' bgs)
1248	Collect S014-DPT1007-005.0-20220301
1258	Begin purge at S014-DPT1007-015.0 (screen 13'-17')
1301	Collect S014-DPT1007-015.0-20220301
1312	Begin purge at S014-DPT1007-025.0 (screen 23'-27' bgs)
1315	Collect S014-DPT1007-025.0-20220301 and S014-FD-~~DPT~~ 20220301-01
1340	Begin purge at S014-DPT1007-035.0 (screen 33'-37')
1343	Collect S014-DPT1007-035.0-20220301
1409	Begin purge S014-DPT1007-045.0 (screen 43'-47')
1412	Collect S014-DPT1007-045.0-20220301
1420	Pressure grout S014-DPT1007 boring and load rig on trailer
1430	Arrive at S014-DPT1008 (S014-DPT-24) and hand auger to 5' bgs)
1457	Begin purge at S014-DPT1008-007.0-20220301 (screen 5'-9' bgs)
1500	Collect S014-DPT1008-007.0-20220301
1508	Begin purge at S014-DPT1008-015.0 (screen 13'-17' bgs)
1511	Collect S014-DPT1008-015.0-20220301
1525	Begin purge at S014-DPT1008-025.0 (screen 23'-27' bgs)
1528	Collect S014-DPT1008-025.0-20220301
1545	Begin purge at S014-DPT1008-035.0 (screen 33'-37' bgs)
1548	Collect S014-DPT1008-035.0-20220301
1608	Begin purge at S014-DPT1008-045.0 (screen 43'-47' bgs)
1611	Collect S014-DPT1008-045.0-20220301
1620	Pressure grout boring and load drill rig on trailer.
1645	Collect S014-FB-20220301-01 (field blank)
1650	Collect S014-EB-20220301-01 (equipment blank)



Photo 01. Photo of drill rig and crew at S014-DPT1006.



Photo 02. Photo of S014-DPT1007 boring location.



Photo 03. Photo of drill rig and crew at S014-DPT1008.



Photo 04. Photo ULA launch at S014-DPT1008.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**3/2/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	62			71			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S014	9.5	0	9
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**9**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	9.5	0	9.5
Colton Wiegmann-Hinst	DrillPro LLC	S014	9.5	0	9.5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**19**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/2/2022	9	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1009-005.0-20220302	0839	PFAS	Pending
S014-DPT1009-015.0-20220302	0858		
S014-DPT1009-025.0-20220302	0913		
S014-DPT1009-035.0-20220302	0936		
S014-DPT1009-045.0-20220302	1005		
S014-FD-20220302-01	1005		
S014-DPT1010-005.0-20220302	1048		
S014-DPT1010-015.0-20220302	1101		
S014-DPT1010-025.0-20220302	1121		
S014-DPT1010-035.0-20220302	1430		
S014-DPT1010-045.0-20220302	1449		
S014-DPT1011-005.0-20220302	1514		
S014-DPT1011-015.0-20220302	1526		
S014-DPT1011-025.0-20220302	1539		
S014-DPT1011-035.0-20220302	1553		
S014-DPT1011-045.0-20220302	1613		
S014-FD-20220302-02	1613		
S014-FB-20220302-01	1641		
S014-EB-20220302-01	1645		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to DPT Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted DPT PFAS GW sampling at 3 DPT locations at S014, KSC, FL. Collected a total of 19 aqueous samples (including 4 quality control samples). Drillers encountered frequent issues with DPT outer rods connecting together and disconnecting from each other. Staged new drum 22060 on pallet 216883 at CCF, KSC, FL, and transferred approximately 6-8 gallons of IDW DPT purge water.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch	**3/2/2022**
Signature: Lynch, Robert Digitally signed by Lynch, Robert Date: 2022.03.02 19:05:18 -05'00'	**3/2/22**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/2/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.03.03 07:35:23 -05'00'	**3/2/2022**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 03/02/2022 0730 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Robert Lynch

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:	Signature:
Aram Garcia	
Colten Hirst	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
03-02-22
Operator/Inspector: Date:

SGS North America Inc - Orlando

Chain of Custody

4405

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : **PAGE___1___OF___2____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State:** FL **Zip:** 32937

Project Contact: Denise Rivers **Email:** drivers@hgl.com

Phone #: 910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1: Robert Lynch **Sampler 2:**

Project Information

Project Name: PFAS Assessment

Street Kennedy Space Center

City Merritt Island **State** FL

Project # NS1010.01.06

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1009-005.0-20220302	3/2/22	0839	RL	GW	2		X								X	
	S014-DPT1009-015.0-20220302	3/2/22	0858	RL	GW	2		X								X	
	S014-DPT1009-025.0-20220302	3/2/22	0913	RL	GW	2		X								X	
	S014-DPT1009-035.0-20220302	3/2/22	0936	RL	GW	2		X								X	
	S014-DPT1009-045.0-20220302	3/2/22	1005	RL	GW	2		X								X	
	S014-FD-20220302-01	3/2/22	1005	RL	GW	2		X								X	
	S014-DPT1010-005.0-20220302	3/2/22	1048	RL	GW	2		X								X	
	S014-DPT1010-015.0-20220302	3/2/22	1101	RL	GW	2		X								X	
	S014-DPT1010-025.0-20220302	3/2/22	1121	RL	GW	2		X								X	
	S014-DPT1010-035.0-20220302	3/2/22	1430	RL	GW	2		X								X	
	S014-DPT1010-045.0-20220302	3/2/22	1449	RL	GW	2		X								X	
	S014-DPT1011-005.0-20220302	3/2/22	1514	RL	GW	2		X								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____

vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
		6	7		8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

SGS North America Inc - Orlando

Chain of Custody

4405

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : **PAGE___2___OF___2____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1011-015.0-20220302	3/2/22	1526	RL	GW	2		X								X	
	S014-DPT1011-025.0-20220302	3/2/22	1539	RL	GW	2		X								X	
	S014-DPT1011-035.0-20220302	3/2/22	1553	RL	GW	2		X								X	
	S014-DPT1011-045.0-20220302	3/2/22	1613	RL	GW	2		X								X	
	S014-FD-20220302-02	3/2/22	1613	RL	GW	2		X								X	
	S014-FB-20220302-01	3/2/22	1641	RL	GW	2		X								X	
	S014-EB-20220302-01	3/2/22	1645	RL	GW	2		X								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____

vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
		6	7		8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

NASA / KSC SWMU 014 3/2/2022

NS1010.01.03

PURPOSE: Conduct DPT PFAS GW Sampling

PERSONNEL: Rob L (HGL), Aram G (GWP) & Colleen W (GWP)

EQUIPMENT: Geoprobe, inner/outer DPT Rods, HDPE Tubing, Silicon tubing, Peristaltic Pump, expendable points, Portland cement, work trucks

WEATHER: HI - 71° F LO 62° F Partly Sunny Wind N 7 mph

0730 - All personnel onsite. Conducted TGSM & Rig Safety Inspection. Rig status is green per FRP website.

0821 - Staged rig at SWMU 014-DPT 1009 (SWMU 14-DPT-19) and hand augered to 5 ft bgs.

0839 - Began pursing SWMU 014-DPT1009-005.0 (screen 3-7 ft bgs)

0842 - collected SWMU 014-DPT 1009-005.0-20220302

0855 - Began pursing SWMU 014-DPT 1009-015.0 (screen 13-17 ft bgs)

0858 - collected SWMU 014-DPT 1009-015.0-20220302

0913 - Began Purging SWMU 014-DPT 1009-025.0 (screen 23-27 ft bgs)

0916 - collected SWMU 014-DPT 1009-025.0-20220302

0933 - Began pursing SWMU 014-DPT 1009-035.0 (screen 33-37 ft bgs)

0936 - collected SWMU 014-DPT 1009-035.0-20220302

1002 - Began purging SWMU 014-DPT 1009-045.0 (screen 43-47 ft bgs)

1005 - collected SWMU 014-DPT 1009-045.0-20220302 & SWMU 014-FD-20220302-01

1008 - Drillers began to pressure grout SWMU 014-DPT 1009.

1030 - Staged rig at SWMU 014-DPT 1010 (SWMU 14-DPT-20) and hand augered to 5 ft bgs

1045 - Began pursing SWMU 014-DPT 1010-005.0 (screen 3-7 ft bgs)

1048 - collected SWMU 014-DPT 1010-005.0-20220302

1058 - Began pursing SWMU 014-DPT 1010-015.0-20220302 (screen 13-17 ft bgs)

1101 - Collected SWMU 014-DPT 1010-015.0-20220302

1118 - Began Purging SWMU 014-DPT 1010-025.0 (screen 23-27 ft bgs)

1121 - collected SWMU 014 DPT 1010-025.0-20220302

1220 - Began pursing SWMU 014-DPT 1010-035.0-20220302 (screen 33-37 ft bgs)

~~1223 - collected SWMU 014-DPT 1010-035.0-20220302~~ RL Trouble pursing

NOTE- Drillers could not pull inner rods out initially at 11:40, and had to pull all outer rods out and re-grout to 32 ft

NASA/KSC 3/2/2022

NS1010.01.03

1225 - Drillers brake for lunch

1330 - Drillers back onsite. Note - Trouble sursing water for SØ14-DPT1010-035.0. Replaced tubing and troubleshooted

1353 Drillers pulling rods out, stepping out from borehole, and pushing back down to 37'

1405 - Drillers pulled all outer rods up. Screen was plugged and was never open for pursing.

1427 - Began pursing SØ14-DPT1010-035.0 (screen 33-37 ft bgs)

1430 - Collected SØ14-DPT1010-035.0-20220302

1446 - Began pursing SØ14-DPT1010-045.0-20220302 (screen 43-47 ft bgs)

1449 - Collected SØ14-DPT1010-045.0-20220302

1452 - Drillers began to pressure grout SØ14-DPT1010

1509 - Drillers staged rig at SØ14-DPT1011 (S14-DPT-12)

1511 - Began pursing SØ14-DPT1011-005.0 (screen 3-7 ft bgs)

1514 - Collected SØ14-DPT1011-005.0-20220302

1523 - Began pursing SØ14-DPT1011-015.0 (screen 13-17)

1526 - Collected SØ14-DPT1011-015.0-20220302

1536 - Began pursing SØ14-DPT1011-025.0-20220302 (screen 23-27 ft bgs)

1539 - Collected SØ14-DPT1011-025.0-20220302

1550 - Began pursing SØ14-DPT1011-035.0 20220302

1553 - Collected SØ14-DPT1011-035.0-20220302

1610 - Began pursing SØ14-DPT1011-045.0 (screen 43-47 ft bgs)

1613 - Collected SØ14-DPT1011-045.0-20220302 and SØ14-FD-20220302-02

1616 - Drillers began to pressure grout SØ14-DPT1011

1641 - Collected SØ14-FB-20220302-01

1645 - Collected SØ14-EB-20220302-01

1650 All personnel offsite

1705 - Generated approx 6-8 gallons of IDW and staged new drum 226060 at CCF on Pallet 216883

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**3/3/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	52	76

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S014	5	0	5
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	5	0	5
Colton Wiegmann-Hinst	DrillPro LLC	S014	5	0	5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**10**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/3/2022	5	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continued collection of GW samples to be analyzed for PFAS

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1012-005.0-20220303	0831	PFAS	Pending
S014-DPT1012-015.0-20220303	0844		
S014-DPT1012-025.0-20220303	0857		
S014-DPT1012-035.0-20220303	0916		
S014-DPT1012-045.0-20220303	0945		
S014-DPT1013-005.0-20220303	1028		
S014-DPT1013-015.0-20220303	1040		
S014-FD-20220303-01	1040		
S014-DPT1013-025.0-20220303	1056		
S014-DPT1013-035.0-20220303	1112		
S014-DPT1013-045.0-20220303	1136		
S014-FB-20220303-01	1200		
S014-EB-20220303-01	1203		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to DPT Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted DPT PFAS GW sampling at 2 DPT locations at S014, KSC, FL. Collected a total of 13 aqueous samples (including 3 quality control samples). Due to launch activities, only Dig Category A locations could be sampled. Generated approximately 4-6 gallons of DPT purge water IDW, and transferred into drum 22060 on pallet 216883 at CCF, KSC, FL. All personnel offsite by 1215, and mobilized to S118 for continued DPT GW sampling.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch — **3/3/2022**

Signature: Lynch, Robert — Digitally signed by Lynch, Robert Date: 2022.03.03 17:29:06 -05'00' — **3/3/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett — **3/3/2022**

Signature: Jellett, Tim — Digitally signed by Jellett, Tim Date: 2022.03.04 09:41:20 -05'00' — **3/3/2022**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 03/03/2022 0730 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Robert Lynch

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:	Signature:
Aram Garcia	
Colton Hirst	

SGS North America Inc - Orlando

Chain of Custody

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

4405

SGS - ORLANDO JOB # : **PAGE___1___OF___3____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **S014 PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1009-005.0-20220302	3/2/22	0839	RL	GW	2		x								x	
	S014-DPT1009-015.0-20220302	3/2/22	0858	RL	GW	2		x								x	
	S014-DPT1009-025.0-20220302	3/2/22	0913	RL	GW	2		x								x	
	S014-DPT1009-035.0-20220302	3/2/22	0936	RL	GW	2		x								x	
	S014-DPT1009-045.0-20220302	3/2/22	1005	RL	GW	2		x								x	
	S014-FD-20220302-01	3/2/22	1005	RL	GW	2		x								x	
	S014-DPT1010-005.0-20220302	3/2/22	1048	RL	GW	2		x								x	
	S014-DPT1010-015.0-20220302	3/2/22	1101	RL	GW	2		x								x	
	S014-DPT1010-025.0-20220302	3/2/22	1121	RL	GW	2		x								x	
	S014-DPT1010-035.0-20220302	3/2/22	1430	RL	GW	2		x								x	
	S014-DPT1010-045.0-20220302	3/2/22	1449	RL	GW	2		x								x	
	S014-DPT1011-005.0-20220302	3/2/22	1514	RL	GW	2		x								x	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation 2	Relinquished By/Affiliation 3	Date Time:	Received By/Affiliation 4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

SGS North America Inc - Orlando

Chain of Custody

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www.sgs.com

4405

SGS - ORLANDO JOB # : **PAGE___2___OF___3____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **S014 PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1011-015.0-20220302	3/2/22	1526	RL	GW	2		x								X	
	S014-DPT1011-025.0-20220302	3/2/22	1539	RL	GW	2		x								X	
	S014-DPT1011-035.0-20220302	3/2/22	1553	RL	GW	2		x								X	
	S014-DPT1011-045.0-20220302	3/2/22	1613	RL	GW	2		x								X	
	S014-FD-20220302-02	3/2/22	1613	RL	GW	2		x								X	
	S014-FB-20220302-01	3/2/22	1641	RL	GW	2		x								X	
	S014-EB-20220302-01	3/2/22	1645	RL	GW	2		x								X	
	S014-DPT1012-005.0-20220303	3/3/22	0831	RL	GW	2		x								X	
	S014-DPT1012-015.0-20220303	3/3/22	0844	RL	GW	2		x								X	
	S014-DPT1012-025.0-20220303	3/3/22	0857	RL	GW	2		x								X	
	S014-DPT1012-035.0-20220303	3/3/22	0916	RL	GW	2		x								X	
	S014-DPT1012-045.0-20220303	3/3/22	0945	RL	GW	2		x								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation 2	Relinquished By/Affiliation 3	Date Time:	Received By/Affiliation 4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

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Chain of Custody

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www.sgs.com

4405 **SGS - ORLANDO JOB # :** **PAGE___3___OF___3____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information	Project Information
Company Name: HGL, Inc.	**Project Name: S014 PFAS Assessment**
Address: 2405 N. Courtney Parkway, STE 203	**Street Kennedy Space Center**
City: Merrit Island State: FL Zip:32937	**City Merritt Island State FL**
Project Contact: Denise Rivers Email:drivers@hgl.com	**Project # NS1010.01.06**
Phone #:910-233-8460	**Fax #**
Sampler(s) Name(s) (Printed) **Sampler 1:Robert Lynch Sampler 2:**	**Client Purchase Order #**

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1013-005.0-20220303	3/3/22	1028	RL	GW	2		x								X	
	S014-DPT1013-015.0-20220303	3/3/22	1040	RL	GW	2		x								X	
	S014-FD-20220303-01	3/3/22	1040	RL	GW	2		x								X	
	S014-DPT1013-025.0-20220303	3/3/22	1056	RL	GW	2		x								X	
	S014-DPT1013-035.0-20220303	3/3/22	1112	RL	GW	2		x								X	
	S014-DPT1013-045.0-20220303	3/3/22	1136	RL	GW	2		x								X	
	S014-FB-20220303-01	3/3/22	1200	RL	GW	2		x								X	
	S014-EB-20220303-01	3/3/22	1203	RL	GW	2		x								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation 2	Relinquished By/Affiliation 3	Date Time:	Received By/Affiliation 4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation 6**	**Relinquished By/Affiliation 7**	**Date Time:**	**Received By/Affiliation 8**

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: [signature] Date: 3-3-2022

NASA/KSC SWMU 014 3-3-2022

NS1010.01.03

PURPOSE: Conduct DPT GW PFAS Sampling

PERSONNEL: Rob L. (HGL), Aram G. & Colton W (GWP)

EQUIPMENT: Geoprobe, inner/outer DPT Rods, HDPE tubing, Silicon Tubing, Peristaltic pump, expendable points, portland cement, work trucks

WEATHER: Hi - 76° F Lo - 52° F Mostly Sunny Wind NNW 4mph

0700 - Called KSC work control center. Status is no-dig until approx. 2-4 hrs after launch. Will need to confirm dig status again today if launch goes.

0730 - All personnel onsite. Conducted TGSM and Rig Safety Inspection. Drillers began to re-fuel rig and trailer in for mobilization to SWMU 014 - DPT 1012 (SWMU 014 - DPT 23)

0815 - Drillers staged drill rig at SWMU 014 - DPT 1012 (SWMU 014 - DPT 23) and hand augered to 5 ft bgs.

0828 - Began pursing SWMU 014 - DPT 1012 - 005.0 (screen 3-7 ft bgs)

0831 - Collected SWMU 014 - DPT 1012 - 005.0 - 20220303

* NOTE - Collecting samples from Category A locations

0841 - Began pursing SWMU 014 - DPT 1012 - 015.0 (screen 13-17 ft)

0844 - Collected SWMU 014 - DPT 1012 - 015.0 - 20220303

0854 - Began pursing SWMU 014 - DPT 1012 - 025.0 (screen 23-27 ft)

0857 - Collected SWMU 014 - DPT 1012 - 025.0 - 20220303

0913 - Began pursing SWMU 014 - DPT 1012 - 035.0

0916 - Collected SWMU 014 - DPT 1012 - 035.0 - 20220303

0942 - Began pursing SWMU 014 - DPT 1012 - 045.0 (screen 43-47 ft)

0945 - Collected SWMU 014 - DPT 1012 - 045.0 - 20220303

0948 - Drillers began to pressure grout SWMU 014 - DPT 1012

1015 - Drillers staged rig at SWMU 014 - DPT 1013 (SWMU 014 - DPT 26) and hand cleared to 5 ft bgs

1025 - Began pursing SWMU 014 - DPT 1013 - 005.0 (screen 3-7 ft)

1028 - Collected SWMU 014 - DPT 1013 - 005.0 - 20220303

1037 - Began pursing SWMU 014 - DPT 1013 - 015.0 - 20220303

1040 - Collected SWMU 014 - DPT 1013 - 015.0 - 20220303 & SWMU 014-FD-20220303-01

1053 - Began pursing SWMU 014 - DPT 1013 - 025.0 - ~~2027~~ (screen 23-27)

1056 - Collected SWMU 014 - DPT 1013 - 025.0 - 20220303

NASA/KSC SWMU 014 3-3-2022
NS1010.01.03

1109	-	Began purging S014-DPT1013-035.0 (screen 33-37)
1112	-	Collected S014-DPT1013-035.0-20220303
		* NOTE - Called KSC work control center at 1055 to see if dig status is green. Still no-dig.
1133	-	Began purging S014-DPT1013-045.0 (screen 43-47 ft)
1136	-	Collected S014-DPT1013-045.0-20220303
1139	-	Drillers began to pressure grout S014-DPT1013
1200	-	Collected S014-FB-20220303-01
1203	-	Collected S014-EB-20220303-01
		* NOTE - Drillers offsite at 1155 for lunch
1215	-	All personnel offsite, will mobilize to S118 and will be recorded on separate logbook page.
		* Generated approx. 5-6 gallons of DPT GW purge IDW.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	Daily Quality Control Report
Date:	**3/4/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	52			76			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S014	5	0	5
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S014	5	0	5
Colton Wiegmann-Hinst	DrillPro LLC	S014	5	0	5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**10**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/4/2022	5	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**F = Finish**	Finished collection of GW samples to be analyzed for PFAS

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014-DPT1014-005.0-20220304	0938	PFAS	Pending
S014-FD-20220304-01	0938		
S014-DPT1014-015.0-20220304	0954		
S014-DPT1014-025.0-20220304	1006		
S014-DPT1014-035.0-20220304	1021		
S014-DPT1014-045.0-20220304	1043		
S014-DPT1015-005.0-20220304	1207		
S014-DPT1015-015.0-20220304	1217		
S014-DPT1015-025.0-20220304	1229		
S014-DPT1015-035.0-20220304	1243		
S014-DPT1015-045.0-20220304	1304		
S014-FB-20220304-01	1330		
S014-EB-20220304-01	1333		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to DPT Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted DPT PFAS GW sampling at 2 DPT locations at S014, KSC, FL. Collected a total of 13 aqueous samples (including 3 quality control samples). Generated approximately 4-6 gallons of DPT purge water IDW, and transferred into drum 22060 on pallet 216883 at CCF, KSC, FL.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch	**3/4/2022**
Signature: Lynch, Robert Digitally signed by Lynch, Robert Date: 2022.03.04 14:57:14 -05'00'	**3/4/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/4/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.03.04 15:09:43 -05'00'	**3/4/2022**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 03/04/2022 0730 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Robert Lynch

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:	Signature:
Colten Hirst	
Aram Garcia	

SGS North America Inc - Orlando

Chain of Custody

4405

SGS - ORLANDO JOB # :

PAGE___1___OF___2____

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island State: FL Zip:32937

Project Contact: Denise Rivers Email:drivers@hgl.com

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S014 PFAS Assessment

Street Kennedy Space Center

City Merritt Island State FL

Project # NS1010.01.06

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1014-005.0-20220304	3/4/22	0938	RL	GW	2		X								X	
	S014-FD-20220304-01	3/4/22	0938	RL	GW	2		X								X	
	S014-DPT1014-015.0-20220304	3/4/22	0954	RL	GW	2		X								X	
	S014-DPT1014-025.0-20220304	3/4/22	1006	RL	GW	2		X								X	
	S014-DPT1014-035.0-20220304	3/4/22	1021	RL	GW	2		X								X	
	S014-DPT1014-045.0-20220304	3/4/22	1043	RL	GW	2		X								X	
	S014-DPT1015-005.0-20220304	3/4/22	1207	RL	GW	2		X								X	
	S014-DPT1015-015.0-20220304	3/4/22	1217	RL	GW	2		X								X	
	S014-DPT1015-025.0-20220304	3/4/22	1229	RL	GW	2		X								X	
	S014-DPT1015-035.0-20220304	3/4/22	1243	RL	GW	2		X								X	
	S014-DPT1015-045.0-20220304	3/4/22	1304	RL	GW	2		X								X	
	S014-FB-20220304-01	3/4/22	1330	RL	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:

7 Day

5 Day

3 Day *RUSH* _____

2 Day *RUSH* _____

1 Day *RUSH* _____

Other _____

vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):_____

http://www.sgs.com/en/terms-and-conditions

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Chain of Custody

4405

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SGS - ORLANDO JOB # : **PAGE___2___OF___2____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **S014 PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-EB-20220304-01	3/4/22	1333	RL	GW	2		X								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____

vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
		6	7		8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
03-04-22
Operator/Inspector: Date:

NASA / KSC SØ14 3/4/22

NSI010.01.03

PURPOSE: Conduct / complete DPT PFAS GW Samplings

PERSONNEL: Rob L (HGL), Aram G. & Colten W (GWP)

EQUIPMENT: Geoprobe, inner/outer DPT Rods, Expendable point, HDPE Tubing, Silicon tubing, Peristaltic pump, Portland Cement

WEATHER: H1-76° F L0-54° F Mostly Sunny Wind N @mph

0925 - Mobilized from SI18. Staged rig at SØ14-DPT1014 (SØ14-DPT21) and hand cleared to 5 ft.

0935 - Began pursing SØ14-DPT1014-005.0 (screen 3-7 ft)

0938 - Collected SØ14-DPT1014-005.0-20220304 & SØ14-FD-20220304-01

0951 - Began pursing SØ14-DPT1014-015.0-20220304 (screen 13-17)

0954 - Collected SØ14-DPT1014-015.0-20220304

1003 - Began pursing SØ14-DPT1014-025.0 (screen 23-27)

1006 - Collected SØ14-DPT1014-025.0-20220304

1018 - Began pursing SØ14-DPT1014-035.0 (33-37 ft)

1021 - Collected SØ14-DPT1014-035.0-20220304

1040 - Began pursing SØ14-DPT1014-045.0 (screen 43-47 ft)

1043 - Collected SØ14-DPT1014-045.0-20220304

1046 - Drillers began to pressure grout SØ14-DPT1014

1107 - Mobilized rig to SØ14-DPT1015 (SØ14-DPT31) and drillers broke for lunch (offsite)

1149 - Drillers back onsite.

1154 - Drillers staged rig at SØ14-DPT1015 and began to hand auger to 5ft

1204 - Began pursing SØ14-DPT1015-005.0-20220304 (screen 3-7 ft)

1207 - Collected SØ14-DPT1015-005.0-20220304

1214 - Began pursing SØ14-DPT1015-015.0 (screen 13-17 ft)

1217 - Collected SØ14-DPT1015-015.0-20220304

1226 - Began pursing SØ14-DPT1015-025.0 (screen 23-27)

1229 - Collected SØ14-DPT1015-025.0-20220304

1240 - Began pursing SØ14-DPT1015-035.0 (screen 33-37 ft)

1243 - Collected SØ14-DPT1015-035.0-20220304

1301 - Began pursing SØ14-DPT1015-045.0 (screen 43-47)

NASA / KSC SWMU 014 3/4/22

NS1010.01.03

1304 - Collected S014-DPT1015-045.0-20220304

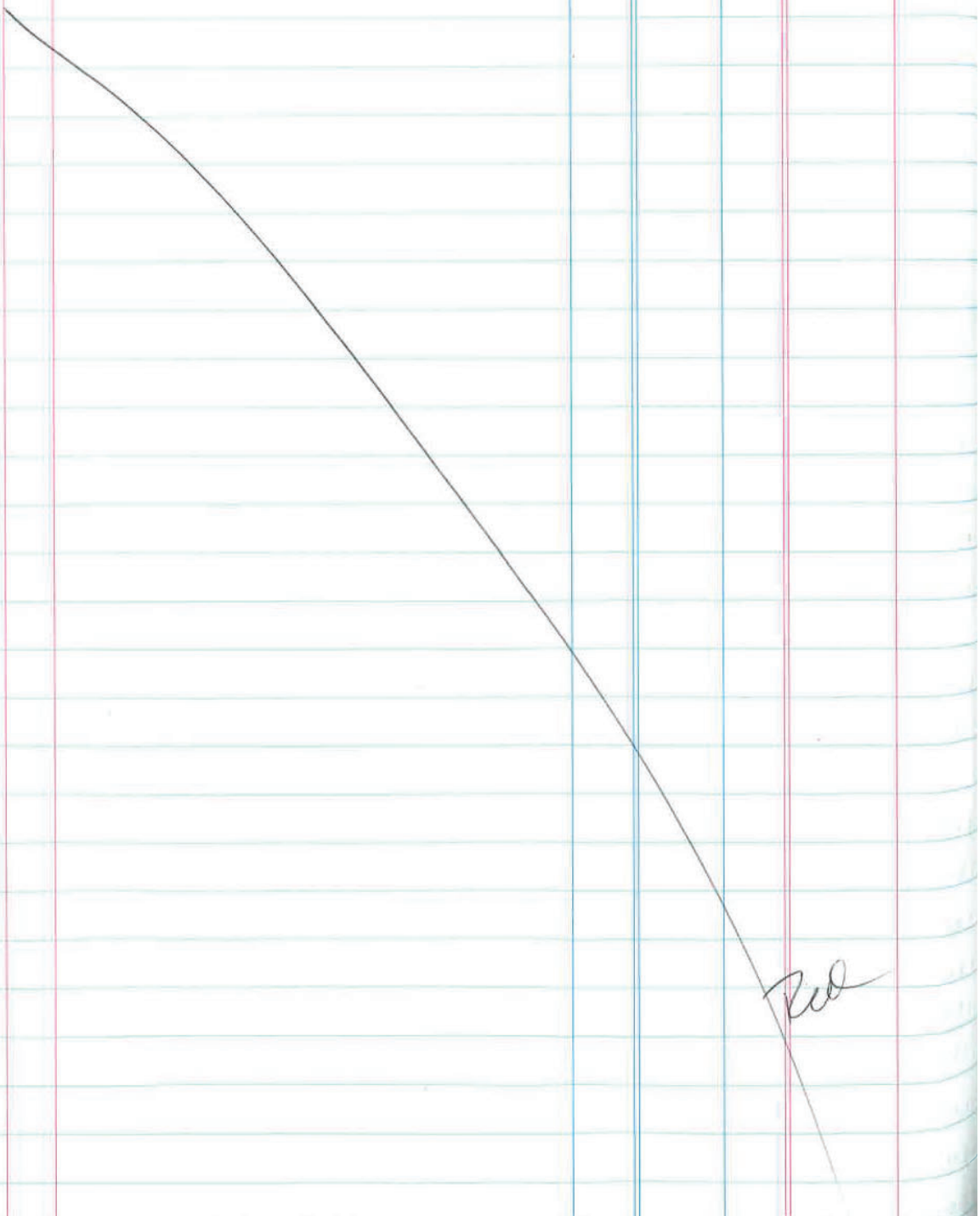
1307 - Drillers began to pressure grout S014-DPT1015

1330 - Collected S014-FB-20220304-01

1333 - Collected S014-EB-20220304-01

* All personnel offsite.

RL
~~1345~~
1405 - Disposed of approx. 5 gallons of DPT purge water IDW into Drum 276060 at CCF.



Daily Quality Control Report

Daily Quality Control Report	
Date:	**6/15/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	SWMU S014 SW Samples
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast		Rain	Fog
	X		X				
Temp	Min.			Max.			
	77			90			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
				X			

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Associate Scientist Leader	SWMU S014	2	0	2
William Duttenhaver	Field Technician	SWMU S014	2	0	2
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**4**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used
TOPCON GPS Unit	06/15/22	N/A	N/A	N/A	2

Daily Quality Control Report

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collect Surface Water Samples	**S/F**	Collected surface water samples at various locations for PFAS/PFOA assessment

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S014 - SW0006, FD - 01	825	PFAS/PFOA	Awaiting Lab Results
S014 - SW0007	850		
S014 - SW0008	900		
S014 - SW0009	920		
S014 - SW0010	935		
S014 - SW0011	950		
S014 - FB - 01	955		
S014 - EB - 01	1000		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Dehydration, Heat Exposure, Slips, Trips and Falls.

6. Description of Work Completed

0700 - Conducted TGSM at Cape field office. Loaded work truck with sampling gear.

0730 - Mob to site. GPS to first location. See attached log book entry and paperwork.

1035 - Packed equipment and samples into work truck. Secured site.

1045 - Site is secure. All employees off site.

Note : D. Lupis TB work truck had mechanical difficulties around 09:35. The vehicle had to be towed to the dealership.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Dustin Lupis	**6/15/2022**
Signature: Dustin Lupis	**6/15/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**6/15/2022**
Signature:	**6/15/2022**

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS _ ORLANDO JOB #: **PAGE___1__OF___1__**

SGS - ORLANDO Quote: **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway STE. 203
City: Merritt Island **State:** FL **Zip:** 32953
Project Contact: Denise Rivers **Email:** drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: William Duttenhaver **Sampler 2:** Dustin Lupis

Project Information

Project Name : SWMU S014
Street A Avenue
City Kennedy Space Center **State** FL
Project # NS1010.01.13
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION: TOTAL # OF BOTTLES	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL - 24 Analytes + GEN X	LAB USE ONLY
	S014 - SW0006 - 000.0 - 20220615	6/15/22	8:25	WD	SW	2	X								X	
	S014 - FD - 20220615 - 01	6/15/22	8:25	WD	SW	2	X								X	
	S014 - SW0007 - 000.0 - 20220615	6/15/22	8:50	WD	SW	2	X								X	
	S014 - SW0008 - 000.0 - 20220615	6/15/22	9:00	WD	SW	2	X								X	
	S014 - SW0009 - 000.0 - 20220615	6/15/22	9:20	WD	SW	2	X								X	
	S014 - SW0010 - 000.0 - 20220615	6/15/22	9:35	WD	SW	2	X								X	
	S014 - SW0011 - 000.0 - 20220615	6/15/22	9:50	WD	SW	2	X								X	
	S014 - FB - 20220615 - 01	6/15/22	9:55	WD	WW	2	X								X	
	S014 - EB - 20220615 - 01	6/15/22	10:00	WD	WW	2	X								X	

Turnaround Time (Business days)

Std. 10 Business Days **Approved By: / Date/Rush Code:**
7 Day *RUSH* _____
5 Day *RUSH* _____
3 Day *EMERGENCY* _____
2 Day *EMERGENCY* _____
1 Day *EMERGENCY* _____
Other _____
Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
5		6	7		8

Lab Use Only : **Custody Seal in Place: Y N** **Temp Blank Provided: Y N** **Preserved Where Applicable: Y N** **Total # of Coolers:_____Cooler Temperature (s) Celsius:_____**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- ☑ Tailgate (daily)
- ☐ Activity Hazard Analysis
- ☐ Pre-Task Hazard Analysis (prior to new task or operation)
- ☐ Site Safety Orientation (new personnel)
- ☐ Supervisor's (monthly)
- ☐ Supervisor's (weekly)
- ☐ UXO Awareness
- ☐ Asbestos Awareness
- ☐ Health and Safety Plan Addendum: _____
- ☐ Other: ___

Date/Time: 06/15/22 0700 Client: KSC/NASA

Location: SWMU 5014 / SH8a Job No.: NS1010.01.13

Meeting/training conducted by: Dustin Lupis

Work Activities: Collect SW Samples for PFAS Assessment

Safety / Training Topics Presented

Chemical Hazards: PFAS/PFOA

Physical Hazards: pinch points, biologicals, Heat exposure, COVID-19, slips, trips, falls

Specific Safety Topic(s): Heat exposure / Dehydration.

Specific Training Covered: Take breaks as needed, stay hydrated.

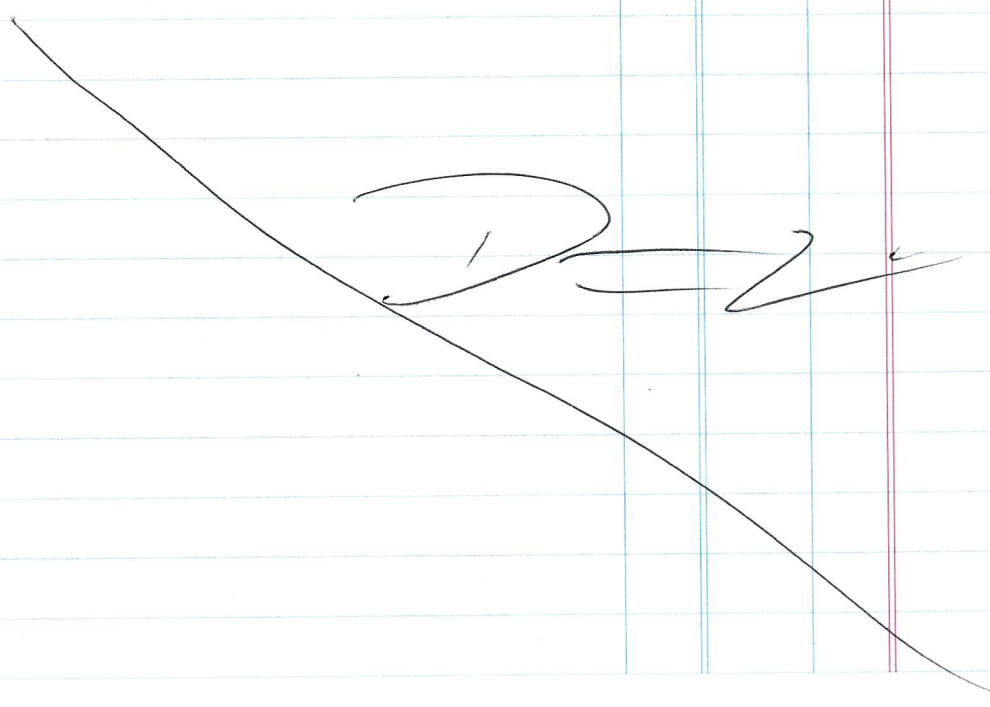
Attendees

Name Printed and Employee Number:	Signature:
Dustin Lupis	
William Duttenhaver	

KSC/NASA SWMU 5014 NS1010.01.13 06/15/22 ~~07/22/22~~

purpose - Collect SW samples for PFAS/PFOA
personnel - Dustin L, Parker D.
Equipment - work truck, TOPcon, Sample cup, decon equipment.
Weather - Hi - 90° Lo - 77° partly cloudy

0700 - Conducted TGSM at field office, Load work truck
0730 - ~~0800~~ - Mob to site - GPS to first location.
0825 - Collect sample 5014-SW0006-000.0-20220615 and 5014-FD-20220615-01 for PFAS/PFOA.
0850 - ~~5014~~ Collect sample 5014-SW0007-000.0 20220615.
0900 - Collect sample 5014-SW0007-000.0-20220615
0920 - Collect sample 5014-SW0008-000.0-20220615
0935 - Collect sample 5014-SW0009-000.0-20220615
0950 - collect sample 5014-SW0010-000.0-20220615
0955 - collect Sample 5014-FB-20220615-01
1000 - collect Sample 5014-EB-20220615-01
1035 - Packed equipment into another work truck, Secure site.
1045 - Site is secure. All employees off site.
Note: D. Lupis chevy TB work truck had mechanical difficulties around 0935. The vehicle had to be towed to the dealership. Collected locations on TOPcon.



Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	Daily Quality Control Report
Date:	**6/17/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	SWMU 014
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	73			88			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
				X			

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Staff Scientist	SWMU 014	10	0	10
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**10**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Mikey Ritter	DrillPro	SWMU 014	10	0	10
Samuel Johnson	DrillPro	SWMU 014	10	0	10
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**20**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7822	6/14/2022	6/17/2022	10	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Quality Control Report

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collect DPT Groundwater Samples	**C = Continuing**	Collect groundwater samples for plume delineation/assessment.

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Time	Analysis	Results - Detected / Not Detected
S014-DPT1016-005.0-20220617	0757	LCQSM537DOD FL-24 analytes + GenX	Pending
S014-DPT1016-015.0-20220617	0811		
S014-DPT1016-025.0-20220617	0824		
S014-DPT1016-035.0-20220617	0840		
S014-DPT1016-045.0-20220617	0857		
S014-DPT1017-005.0-20220617	0939		
S014-DPT1017-015.0-20220617	0951		
S014-DPT1017-025.0-20220617	1007		
S014-DPT1017-035.0-20220617	1024		
S014-FD-20220617-01	1024		
S014-DPT1018-005.0-20220617	1145		
S014-DPT1018-015.0-20220617	1201		
S014-DPT1018-025.0-20220617	1213		
S014-DPT1018-035.0-20220617	1231		
S014-DPT1018-045.0-20220617	1249		
S014-DPT1019-005.0-20220617	1331		
S014-FD-20220617-02	1331		
S014-DPT1019-015.0-20220617	1339		
S014-DPT1019-025.0-20220617	1348		
S014-DPT1019-035.0-20220617	1402		
S014-DPT1019-045.0-20220617	1416		
S118-EB-20220616-01	1440		
S118-FB-20220616-01	1445		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, COVID-19, Slips, Trips and Falls, Inclement Weather, Sun Exposure, Traffic, Struck by, Heat Stress, Team Work, PPE

6. Description of Work Completed

0700- All personnel on-site. Conduct TGSM and rig inspection.

0705 - Jason B. locates previously marked borings S014-DPTE and S014-DPTD

0720 - Mob equipment to security road and unload drill rig from trailer to mob to S014-DPT1016 (**S014-DPTE**)

0740 - Arrive at S014-DPT1016 and hand auger to 5' bgs.

0757-0857 - Collect S014-DPT1016-005.0-20220617 through S014-DPT1016-045.0-20220617.

0905 - Pressure grout S014-DPT1016 boring and mob drill rig to S014-DPT1017 (**S014-DPTD**)

0920 - Arrive at S014-DPT1017 and hand auger to 5' bgs.

0939-1044 - Collect S014-DPT1017-005.0-20220617 through S014-DPT1017-045.0-20220617.

1050 - Pressure grout S014-DPT1017 and mob drill rig to trailer to load.

1125 - Arrive at S014-DPT1018 (**S014-DPTC**) and fill drill rig with water and hand auger boring location to 5' bgs.

1145-1249 - Collect S014-DPT1018-005.0-20220617 through S014-DPT1018-045.0-20220617.

1300 - Pressure grout S014-DPT1018 boring and load drill rig on trailer.

1315 -Arrive at S014-DPT1019 (**S014-DPTC**) and hand auger to 5' bgs.

1331-1416 - Collect S014-DPT1019-005.0-20220617 through S014-DPT1019-045.0-20220617.

1425 - Pressure grout S014-DPT1019 boring and secure site.

1440-1445 - Collect S014-EB-20220617-01 and S014-FB-20220617-01.

1500 - Drillers off-site. Jason B. mobs to CCF IDW to offload contained IDW.

1525 - Jason B. add ~12 gallons of IDW to drum #226060 on pallet #216883. Drum is ~60% filled.

Daily Quality Control Report

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**6/17/2022**
Signature:	**6/17/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**6/17/2022**
Signature:	**6/17/2022**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 6-17-2022 / 0700 Client: KSC

Location: NASA/KSC - SLF Job No.: NS1010.01.03

Meeting/training conducted by: Jason Bublitz

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Traffic

Specific Training Covered: Be mindful of moving traffic. Use cones and wear high visibility clothing when working near roadway.

Attendees

Name Printed and Employee Number:	Signature:
Jason Bublitz	
Samuel Johnson	
Micky Rifkin	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: 7822

Equipment Number: 195

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK MD
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK MD
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK MD	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK MD	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: Micky Ritter Date: 06.17.2022

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SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 114 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537/DODFL-24 analytes + GenX	LAB USE ONLY
	S114-DPT1014-045.0-20220616	6/16/22	0820	JB	GW	2		X								X	
	S114-DPT1023-005.0-20220616	6/16/22	0949	JB	GW	2		X								X	
	S114-DPT1023-015.0-20220616	6/16/22	1001	JB	GW	2		X								X	
	S114-DPT1023-025.0-20220616	6/16/22	1016	JB	GW	2		X								X	
	S114-DPT1023-035.0-20220616	6/16/22	1028	JB	GW	2		X								X	
	S114-FD-20220616-01	6/16/22	1028	JB	GW	2		X								X	
	S114-EB-20220616-01	6/16/22	1055	JB	WW	2		X								X	
	S114-FB-20220616-01	6/16/22	1100	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2 TLA Rent 6/17/2022 15:35	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):_____

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Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-DPT1007-005.0-20220616	6/16/22	1239	JB	GW	2		X								X	
	S118-DPT1007-015.0-20220616	6/16/22	1251	JB	GW	2		X								X	
	S118-DPT1007-025.0-20220616	6/16/22	1308	JB	GW	2		X								X	
	S118-DPT1007-035.0-20220616	6/16/22	1323	JB	WW	2		X								X	
	S118-DPT1007-045.0-20220616	6/16/22	1343	JB	WW	2		X								X	
	S118-DPT1008-005.0-20220616	6/16/22	1459	JB	GW	2		X								X	
	S118-DPT1008-015.0-20220616	6/16/22	1510	JB	GW	2		X								X	
	S118-DPT1008-025.0-20220616	6/16/22	1529	JB	GW	2		X								X	
	S118-DPT1008-035.0-20220616	6/16/22	1543	JB	GW	2		X								X	
	S118-DPT1008-045.0-20220616	6/16/22	1601	JB	GW	2		X								X	
	S118-FD-20220616-01	6/16/22	1601	JB	GW	2		X								X	
	S118-EB-20220616-01	6/16/22	1620	JB	GW	2		X								X	

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- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

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	6-17-22/1535	2 6/17/2022 1535	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

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Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-FB-20220616-01	6/16/22	1625	JB	WW	2		X								X	

Turnaround Time (Business days)

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- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

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	6-17-22/1535	2 6/17/2022 15:35	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

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Address: 2405 N. Courtney Parkway, STE 203
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Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAA	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1016-005.0-20220617	6/17/22	0757	JB	GW	2		X								X	
	S014-DPT1016-015.0-20220617	6/17/22	0811	JB	GW	2		X								X	
	S014-DPT1016-025.0-20220617	6/17/22	0824	JB	GW	2		X								X	
	S014-DPT1016-035.0-20220617	6/17/22	0840	JB	GW	2		X								X	
	S014-DPT1016-045.0-20220617	6/17/22	0857	JB	GW	2		X								X	
	S014-DPT1017-005.0-20220617	6/17/22	0939	JB	GW	2		X								X	
	S014-DPT1017-015.0-20220617	6/17/22	0951	JB	GW	2		X								X	
	S014-DPT1017-025.0-20220617	6/17/22	1007	JB	GW	2		X								X	
	S014-DPT1017-035.0-20220617	6/17/22	1024	JB	GW	2		X								X	
	S014-FD-20220617-01	6/17/22	1024	JB	GW	2		X								X	
	S014-DPT1017-045.0-20220617	6/17/22	1044	JB	GW	2		X								X	
	S014-DPT1018-005.0-20220617	6/17/22	1145	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
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1 Day *RUSH* _____
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- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Received By/Affiliation 2: 6/17/22 15:35

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Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S014-DPT1018-015.0-20220617	6/17/22	1201	JB	GW	2		X								X	
	S014-DPT1018-025.0-20220617	6/17/22	1213	JB	GW	2		X								X	
	S014-DPT1018-035.0-20220617	6/17/22	1231	JB	GW	2		X								X	
	S014-DPT1018-045.0-20220617	6/17/22	1249	JB	GW	2		X								X	
	S014-DPT1019-005.0-20220617	6/17/22	1331	JB	GW	2		X								X	
	S014-FD-20220617-02	6/17/22	1331	JB	GW	2		X								X	
	S014-DPT1019-015.0-20220617	6/17/22	1339	JB	GW	2		X								X	
	S014-DPT1019-025.0-20220617	6/17/22	1348	JB	GW	2		X								X	
	S014-DPT1019-035.0-20220617	6/17/22	1402	JB	GW	2		X								X	
	S014-DPT1019-045.0-20220617	6/17/22	1416	JB	GW	2		X								X	
	S014-EB-20220617-01	6/17/22	1440	JB	WW	2		X								X	
	S014-FB-20220617-01	6/17/22	1445	JB	WW	2		X								X	

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1 Day *RUSH* _____
Other _____
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- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2 TH GA 6/17/22 1535	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):_____

http://www.sgs.com/en/terms-and-conditions

NASA / KSC - SWMU 014 6/17/22
NS1010.01.03

Purpose : Collect PFAS delineation samples from SWMU 014.
Personnel : Jason B (CHGE), Mikey R & Sam J. (GWP).
Equipment : Geoprobe, HDPE, master flex, peristaltic pump, work trucks, portland cement, mixer/auger rods, temporary (SS) screen.
Weather : HI- 88 LO - 73 clear

0700 - Arrive on-site. Conduct TGSM & rig inspection.
0705 - Jason B. locate previously marked DPTE & DPTD.
0720 - mob equipment to security road and unload drill rig to mob to S014-DPT1016 (DPTE).
0740 - hand auger to 5' bgs at S014-DPT1016.
0754 : Begin purge at S014-DPT1016-005.0
0757 : Collect S014-DPT1016-005.0-20220617
0808 : Begin purge S014-DPT1016-015.0
0811 : Collect S014-DPT1016-015.0-20220617
0821 : Begin purge at S014-DPT1016-025.0
0824 : Collect S014-DPT1016-025.0-20220617
0837 Begin purge at S014-DPT1016-035.0
0840 Collect S014-DPT1016-035.0-20220617
0854 Begin purge at S014-DPT1016-045.0
0857 Collect S014-DPT1016-045.0-20220617.
0905 Pressure grout S014-DPT1016 boring and mobs to S014-DPT1017 (DPTD)
0920 : hand auger to 5' bgs at S014-DPT1017
0936 : Begin purge at S014-DPT1017-005.0
0939 : Collect S014-DPT1017-005.0-20220617.
0948 : Begin purge at S014-DPT1017-015.0
0951 : Collect S014-DPT1017-015.0-20220617.
1004 : Begin purge at S014-DPT1017-025.0
1007 : Collect S014-DPT1017-025.0-20220617
1021 Begin purge at S014-DPT1017-035.0
1024 Collect S014-DPT1017-035.0-20220617 & S014-FD-20220617-01.

NASA / KSC - SWMU 014 6/17/22
NS1010.01.03

1050 : Pressure grout S014-DPT1017 and mob drill rig back to trailer to load.
1125 : Arrive at S014-DPT1018 (S014-DPTC) and load rig with water and hand auger to 5' bgs.
1142 Begin purge at S014-DPT1018-005.0
1145 Collect S014-DPT1018-005.0-20220617
1158 Begin purge at S014-DPT1018-015.0
1201 Collect S014-DPT1018-015.0-20220617
1210 Begin purge at S014-DPT1018-025.0
1213 Collect S014-DPT1018-025.0-20220617
1228 Begin purge at S014-DPT1018-035.0
1231 Collect S014-DPT1018-035.0-20220617
1246 : Begin purge at S014-DPT1018-045.0
1249 : Collect S014-DPT1018-045.0-20220617
1300 : Pressure grout S014-DPT1018 boring location and load drill rig on trailer. ~~to~~ JB
1315 : Arrive at S014-DPT1019 (S014-DPTC), hand auger to 5' bgs.
1328 : Begin purge at S014-DPT1019-005.0
1331 : Collect S014-DPT1019-005.0-20220617 & S014-FD-20220617-02
1336 Begin purge at S014-DPT1019-015.0
1339 Collect S014-DPT1019-015.0-20220617
1345 Begin purge at S014-DPT1019-025.0
1348 Collect S014-DPT1019-025.0-20220617
1359 Begin purge at S014-DPT1019-035.0
1402 Collect S014-DPT1019-035.0-20220617
1413 Begin purge at S014-DPT1019-045.0
1416 Collect S014-DPT1019-045.0-20220617
1425 : Pressure grout S014-DPT1019 boring and secure site.
1440 : Collect S014-EB-20220617-01 (equipment blank)
1445 : Collect S014-FB-20220617-01 (field blank).
1500 : Drillers off-site. Jason B. mobs to CCF to unload IDW.



Photo 01. Photo of drill rig and crew at S014-DPT1017 boring location.



Photo 02. Photo of drill crew hand auguring boring at S014-DPT1018.



Photo 03. Photo of drill rig at S014-DPT1019.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	Daily Quality Control Report
Date:	**6/22/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0097
Project Name:	PFAS Site Charecterization
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast	Rain / Fog
			X		
Temp	Min.		Max.		
	70		86		
Wind	Still	Moderate	High	Gust	
		X			
Humidity	Dry	Moderate	High	Rainfall	
			X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Justin Vojak	Staff Scientist	SWMU 118/014	11.5	0	11.5
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**11.5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Mikey Ritter	DrillPro	SWMU014/118	9.5	0	9.5
Samuel Johnson	DrillPro	SWMU014/118	9.5	0	9.5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**2**	**TOTAL HOURS WORKED**			**19**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7822	6/14/2022-	6/22/2022	8	0	1.5

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Quality Control Report

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collect DPT Groundwater Samples	**C = Continuing**	Groundwater sample collection for plume delineation/assessment.

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Time	Analysis	Results - Detected / Not Detected
S118-DPT1009-005.0-20220622	1013		
S118-DPT1009-015.0-20220622	1029		
S118-DPT1009-025.0-20220622	1044		
S118-DPT1009-035.0-20220622	1058		
S118-DPT1009-045.0-20220622	1115		
S118-DPT1010-005.0-20220622	1413		
S118-DPT1010-015.0-20220622	1426		
S118-DPT1010-025.0-20220622	1438		
S118-DPT1010-035.0-20220622	1453		
S118-DPT1010-045.0-20220622	1510		
S118-FD-20220622-01	1510		
S118-EB-20220622-01	1536		
S118-FB-20220622-01	1541		
S014-DPT1010-015.0-20220622	1630		
S014-DPT1010-025.0-20220622	1640		
S014-DPT1010-035.0-20220622	1654		
S014-DPT1010-045.0-20220622	1713		
S014-FD-20220622-01	1713		
S014-EB-20220622-01	1718		
S014-FB-20220622-01	1723		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, COVID-19, Slips, Trips and Falls, Inclement Weather, Sun Exposure, Traffic, Struck by, Heat Stress, Team Work, PPE

6. Description of Work Completed

0822- Arrive to site, safety meeting and rig inspection.

0830-Arrive to solar farm, N. Cohen (FL Light and Power) onsite.

0845-0930- Informed there are two high voltage power mains in area of boring. See field notes for step off details.

0955- Begin S118-DPT1009 @ DPTH on figure. Hand clear to 5'.

1010-1115- Purge and collect S118-DTP1009-005.0-045.0. See field notes for details.

1125- Pressure grout boring S118-DPT1009

1200- Begin S118-DPT1010 at DPTI. Hard clear to 5'

1240-1405- Rig service. Rig would not start/hammer is inoperable.

1410-1510- Purge and collect S118-DTP1010-005.0-045.0. See field notes for details.

1523- Pressure grout boring S118-DPT1010

1605- Begin S014-DPT1020 @ DPTA. HA to 5'.

1615- Interval 3-7' dry, no sample.

1620- Interval 8-12' dry, no sample.

1606- Collect S114-EB-20220615-01

1627-1710- Purge and collect S014-DTP1020-005.0-045.0. See field notes for details.

1740- Mobe to CCF, no spill palllets avaible. ~6 gal of IDW generated.

1800- Mobe to field office

1815- Arrive to field office. QC and pack samples.

1900- Depart field office

1915- Stage samples at Merritt Island office for courier pick up.

1930- End of day.

Daily Quality Control Report

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Justin Vojak	**6/22/2022**
Signature: *Justin Vojak*	**6/22/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**6/22/2022**
Signature:	**6/22/2022**

HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- ☑ Tailgate (daily)
- ☐ Activity Hazard Analysis
- ☐ Pre-Task Hazard Analysis (prior to new task or operation)
- ☐ Site Safety Orientation (new personnel)
- ☐ Supervisor's (monthly)
- ☐ Supervisor's (weekly)
- ☐ UXO Awareness
- ☐ Asbestos Awareness
- ☐ Health and Safety Plan Addendum: _____
- ☐ Other: ___

Date/Time: 6/22/22

Client: NASA

Location: KSC-SWMU118

Job No.: NS1010.01.03

Meeting/training conducted by: J. Vojak

Work Activities: DPT GW Sampling

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Wildlife, Slip, Trips, Fall, Sun Exposure, Heat Stress

Specific Safety Topic(s): Vehicle safety while working on road way.

Specific Training Covered: Proper Lifting Technique

Attendees

Name Printed and Employee Number:	Signature:
J. Vojak	
Mickey Rifer	
Samuel Johnson	

HydroGeoLogic, Inc
Exceeding Expectations

Daily Drill Rig Inspection Checklist

Project Name/Number: PFAS Site Assment –

Make/Model Number: 7822

Equipment Number: 195

Hours/Mileage: NA

Rig clean and free of soils, oils, and other debris.	✓	Tracks in good condition.	–
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	✓	Tires fully inflated and in good condition.	NA
Rig controls clearly labeled and in working condition.	✓	Back-up alarm working.	NA
Rig Kill Switch in working order.	✓	First Aid Kit accessible and stocked.	✓
All of the Rig's connections tightened and leak-free.	✓	Fire Extinguisher accessible and fully charged.	✓
Parking brake functions properly.	NA	Eye Wash full and accessible.	–
Steering controls in working order and clear of obstacles.	NA	Hearing protection available and is being used during hammering.	✓
Copy of the manual for all drilling equipment available.	✓	All overhead and underground hazards identified.	✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: Mickey Riff / J. Vojak Date: 6-22-21

NASA/KSC SWMU 118 6/22/22

Scope: PFAS DPT Sampling

Crew: J. Vojak (HGL), M. Ritter, S. Johnson (GWP)

Equipment: Geoprobe DPT track rig, Perry Pump, HDPE Tubing, work trucks

Weather: 70-86°F, Clear

0800- Travel to site.

0805- Stop for ice

0810- Mobe to DPTB in Industrial area

0822- Arrive GWP has rig located. Mobe to solar farm

0830- Arrive to solar farm. N. Cohen onsite. Enters solar farm.

0845- Informed there are (2) high voltage power lines in the vicinity of boring location

0900- Review as builts. Original boring location has no conflict but N. Cohen (FL Light & power) request boring to be moved.

0915- Move boring ≈50' N. Contact H. Fowler. move/offset is approved.

0930- N. Cohen stops work until given permission to proceed by his supervisor. He was provide the approved Sunshine 811 ticket & KSC dig permit.

0940- JV/GWP mobe to SS118-DPTH.

0955- Begin SS118-DPT10~~20~~09JV @ DPTH on Figure. Hand clear to 5'

1010- Begin purge for SS118-DPT10~~20~~09JV-005.0. Screen (3->')

1013- Collect SS118-DPT10~~20~~09JV-005.0-20220622

1024- Begin purge for SS118-DPT10~~20~~09JV-015.0- Screen (13-17')

1027- Collect SS118-DPT10~~20~~09JV-015.0-20220622

1040- Begin purge for SS118-DPT10~~20~~09JV-025.0. Screen (23-27')

1044- Collect SS118-DPT10~~20~~09JV-025.0-20220622

NASA/KSC SWMU 118 6/22/22

0955 - Begin purge for S118-DPT10~~20~~09-JV-035.0 - Screen (33-37')
1058 - Collect S118-DPT10~~20~~09-JV-035.0 - 20220622
1112 - Begin purge for S118-DPT10~~20~~09-JV-045.0 - Screen (43-47')
1115 - Collect S118-DPT10~~20~~09-JV-045.0 - 20220622
1125 - Pressure grout boring DPT10~~20~~09 JV
1135 - Rig down & load rig.
1145 - Mobe to DPTI (solar farm)
1200 - Begin S118-DPT10~~20~~10-JV @ DPTI on figure. Hand clear to 5'
1240 - Rig service. Rig unable to start/hammer.
1405 - Rig repaired. Resume drillout.
1410 - Begin purge for S118-DPT10~~2~~1-JV-005.0. Screen (3-7')
1413 - Collect S118-DPT10~~2~~1-JV-005.0-20220622
1423 - Begin purge for S118-DPT10~~2~~1-JV-015.0. Screen (13-17')
1426 - Collect S118-DPT10~~2~~1-JV-015.0-20220622
1435 - Begin purge for S118-DPT10~~2~~1-JV-025.0 - Screen (23-27')
1438 - Collect S118-DPT10~~2~~1-JV-025.0-20220622
1450 - Begin purge for S118-DPT10~~2~~1-JV-035.0 - Screen (33-37')
1453 - Collect S118-DPT10~~2~~1-JV-035.0-20220622
1507 - Begin purge for S118-DPT10~~2~~1-JV-045.0 - Screen (43-47')
1510 - Collect S118-DPT10~~2~~1-JV-045.0-20220622 & S118-~~DPT1001~~-JV-FD-20220622
1523 - Pressure grout boring DPT10~~2~~1-JV
1535 - Rig down & load vehicle.
1536 - Collect S118-EB-20220622-01
1541 - Collect S118-FB-20220622-01
1550 - Mobe to DPTA (SWMU 014)
1605 - Begin S~~118~~014-JV-DPT10~~22~~20-JV @ DPTA on Figure. Hand clear to 5'
1615 - Interval (3'-7') dry. No sample
1620 - Interval (8-12') dry. No sample.
1627 - Begin purge for S014-DPT10~~22~~20-JV-015.0-20220622. Screen (13-17')
1630 - Collect S014-DPT10~~22~~20-015.0-20220622

NASA/KSC SWMU 118/014 6/22/22

1637 - Begin purge for SO14-DPT1022-20JV-025.0. Screen (23-27')
1640 - Collect SO14-DPT1022-20JV-025.0-20220622
1651 - Begin purge for SO14-DPT1020-035.0. Screen (33-37')
1654 - Collect SO14-DPT1020-035.0-20220622
1510 - Begin purge for SO14-DPT1020-045.0. Screen (43-47')
1513 - Collect SO14-DPT1020-045.0-20220622 & SO14-FD-20220622-01JV
1718 - Collect SO14-EB-20220622-01
1723 - Collect SO14-FB-20220622-01
1730 - Rig down.
1740 - Mobe to CCF.
1750 - No spill pallets available ≈ 6 gallons of IDW generated.
1800 - Mobe to field office.
1815 - QC & pack samples.
1900 - Mobe to Merritt Island office.
1915 - Arrive to Merritt Island office, stage samples
1930 - End of day.

SWMU 118 Field Documentation

Daily Quality Control Report

HGL HydroGeoLogic, Inc. Exceeding Expectations	Daily Quality Control Report
Date:	**2/16/2022**
NASA Remediation Project Manager	Deda Johansen
HGL Program Manager:	Richard Smith
HGL Project Manager:	Richard Smith
Prime Contract No.	80KSC019D0012
Project Name:	SWMU #114, #118
Project No.	NS1010.01.12

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	71	76

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Howard Fowler	Senior Scientist	SWMU 114/118	8		8
TOTAL HGL PERSONNEL ONSITE		3	TOTAL HOURS WORKED		8

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		1	0

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Jeff Zeigler	DrillPro	SWMU 114/118	8		8
Dave Longino	DrillPro	SWMU 114/118	8		8
Colten Hinsk	DrillPro	SWMU 114/118	8		8
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		0	TOTAL HOURS WORKED		24

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
DPT Rig	02/16/22	02/16/22	8		

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Soil Borings	S	Advanced 2 soil borings to 60' for lithologic description

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Analysis	Results - Detected / Not Detected

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

TGSM - Drill rig safety

6. Description of Work Completed

SWMU #114: Advanced 1 lithologic boring (S114-LB01) to 60 feet with sonic rig for lithologic description. IDW placed in drum.

SWMU #118: Advanced 1 lithologic boring (S118-LB01) to 60 feet with sonic rig for lithologic description. IDW placed in drum.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Howard Fowler	**2/16/2022**
Signature:	**2/16/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**2/16/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.02.23 08:30:51 -05'00'	**2/16/2022**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: SWMU 114/118

Make/Model Number: Geoprobe 8140LS

Equipment Number: 1850

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	✓	Tracks in good condition.	✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	✓	Tires fully inflated and in good condition.	NA
Rig controls clearly labeled and in working condition.	✓	Back-up alarm working.	NA
Rig Kill Switch in working order.	✓	First Aid Kit accessible and stocked.	✓
All of the Rig's connections tightened and leak-free.	✓	Fire Extinguisher accessible and fully charged.	✓
Parking brake functions properly.		Eye Wash full and accessible.	✓
Steering controls in working order and clear of obstacles.	✓	Hearing protection available and is being used during hammering.	✓
Copy of the manual for all drilling equipment available.	✓	All overhead and underground hazards identified.	✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: Date: 2/16/22

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-16-22 10:20 Client: KSC/NASA

Location: SWMU 114/118 Job No.: NS1010.01.12

Meeting/training conducted by: Howard Fowler

Work Activities: Soil Borings

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Drill Rig, Slips, Trips & Falls

Specific Safety Topic(s): Pinch points, PPE, lifting techniques

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
Colton Hinst	
Dirk Longino	
Jeff Teague	

BORING LOG

Boring/Well Number: S118-LB01	Permit Number:		FDEP Facility Identification Number:
Site Name: SWMU 118	Borehole Start Date: 02/16/22	Borehole Start Time: 2:00 ☐ AM ☑ PM	
	End Date: 02/16/22	End Time: 3:45 ☐ AM ☑ PM	
Environmental Contractor: HGL	Geologist's Name: Howard Fowler		Environmental Technician's Name:
Drilling Company: DrillPro	Pavement Thickness (inches): NA	Borehole Diameter (inches): 4	Borehole Depth (feet): 60
Drilling Method(s):	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☑ Drum ☑ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☐ Well ☑ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Hand Auger	Cont.	Cont.					1	(0 - 1'): Brown fine to medium sand	SP	D	
							2	(1' - 5'): Grey fine to medium sand		D	
							3			D	
							4			W	
							5			S	
Sonic Core	5'-10'	5'					6	(5'-6"): Brown fine to medium sand		S	
							7	(6' - 6.5'):Tan fine to medium sand		S	
							8	(6.5' - 10'): Dark brown fine to medium sand with minor silt		S	
							9			S	
							10			S	
Sonic Core	10'-20'	9'					11	(10' - 12'): White-grey cemented shells and silt	GM	S	
							12			S	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: 02/16/22
S118-LB01		SWMU 118	End Date: 02/16/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	10'-20'	9'					13 14 15 16 17 18 19 20	(12' - 18'): Grey-white silt with shell (18' - 20'): Grey-white fine to medium sand with abundand shell	ML SW	W W W W W W W W	
Sonic Core	20'-30'	10'					21 22 23 24 25 26 27 28 29 30	(20' - 30'): Grey-white fine sand with shell and minor silt. Abundant shell 24' to 25'.		W W W W W W W W W W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:	02/16/22
S118-LB01		SWMU 118	End Date:	02/16/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	30'-40'	10'					31	(30' - 36'): White-grey fine sand with shell	SW	W	
							32			W	
							33			W	
							34			W	
							35			W	
							36			W	
							37	(36' - 42'): Shell hash with grey fine sand.	GW	S	
							38			S	
							39			S	
							40			S	
							41			S	
							42			S	
Sonic Core	40'-50'	9'					43	(42' - 46'): Grey fine sand	SP	W	
							44			W	
							45			W	
							46			W	
							47	(46' - 47'): Grades to silty fine sand	SM	W	
							48	(47' - 50'): Grey silty fine sand		W	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: 02/16/22
S118-LB01		SWMU 118	End Date: 02/16/22

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
Sonic Core	40'-50'	9'					49		SM	W	
							50			W	
Sonic Core	50'-60'	9'					51	(50' - 60'): Shell hash with greenish grey clayey silt, very soft.	GC	S	
							52			S	
							53			S	
							54			S	
							55			S	
							56			S	
							57			S	
							58			S	
							59			S	
							60			S	
							61				
							62				
							63				
							64				
							65				
							66				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

KSC/NASA SWMU 118 2-16-22

13:45 Howard Fowler and Drill Pro (Dave Lonsine, Cotten Hirst, Jeff Zeigler) on site to advance lithologic soil boring SI18-LB01 to 60', 74°, sunny, west wind

14:00 Begin hand clearing

14:10 Begin advancing soil boring with septic drill rig. Lithologic data entered on soil boring log.

14:50 reach 30'

15:15 reach 60'. Begin grouting borehole

16:00 Complete grouting. Drillers begin cleaning up site.

16:30 Off site

- ½ drum of soil IDW generated mixed with soils from SI14-LB01

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**2/23/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	61			79			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Environmental Scientist	SLF	9	0	9
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**9**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	SLF	9	0	9
Colton Wiegmann-Hinst	DrillPro LLC	SLF	9	0	9
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**2**	**TOTAL HOURS WORKED**			**18**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	2/23/2022	9	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS/PFOA

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118-DPT1000-005.0-20220223	0853	PFAS/PFOA	Pending
S118-DPT1000-015.0-20220223	0906		
S118-FD-20220223-01	0906		
S118-DPT1000-025.0-20220223	0925		
S118-DPT1000-035.0-20220223	0953		
S118-DPT1000-045.0-20220223	1023		
S118-DPT1001-005.0-20220223	1201		
S118-DPT1001-015.0-20220223	1219		
S118-DPT1001-025.0-20220223	1226		
S118-DPT1001-035.0-20220223	1258		
S118-DPT1001-045.0-20220223	1325		
S118-DPT1002-005.0-20220223	1422		
S118-DPT1002-015.0-20220223	1435		
S118-DPT1002-025.0-20220223	1451		
S118-DPT1002-035.0-20220223	1513		
S118-DPT1002-045.0-20220223	1534		
S118-FB-20220223-01	1612		
S118-EB-20220223-01	1618		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls

6. Description of Work Completed

0700 - All personnel on-site. Conduct TGSM and rig inspection.

0720 - Unload drill rig from trailer and mob to S118-DPT1000 (**S118-DPT-13 on field figure**).

0730-0800 - Drillers off-site to fill water tank from PFAS tested hydrant at CCF.

0825 - Arrive at S118-DPT1000 and hand auger to 5' bgs.

0840-0850 - Geoffrey Card (NASA Safety) on-site.

0853-0953 - Collect S118-DPT1000-005.0-20220223, S118-DPT1000-015.0-20220223, FD, S114-DPT1000-025.0-20220223, and S118-DPT1000-035.0-20220223.

1000-1015 - Jason B. off-site to meet Florida City Gas to mark gas line near S118-DPT-12 location.

1023 - Collect S118-DPT1000-045.0-20220223.

1030 - Pressure grout S118-DPT1000 boring and mob rig to trailer.

1045 - All personnel arrive at KARS Park II.

1100-1130 - Drillers break for lunch.

1130 - Arrive at DPT1001 (**S118-DPT-18 on field figure**) and hand clear to 5' bgs.

1201-1325 - Collect S118-DPT1001-005.0-20220223, S118-DPT1001-015.0-20220223, S114-DPT1001-025.0-20220223, S118-DPT1001-035.0-20220223, and S118-DPT1001-045.0-20220223.

1330 - Drill crew pressure grouts S118-DPT1001 boring and loads drill rig on trailer.

1350 - Mob to S118-DPT1002 (**S118-DPT-14 on field figure**) and hand auger to 5' bgs.

1422-1534 - Collect S118-DPT1002-005.0-20220223, S118-DPT1002-015.0-20220223, S114-DPT1002-025.0-20220223, S118-DPT1002-035.0-20220223, and S118-DPT1002-045.0-20220223.

1545 - Drill crew pressure grouts S118-DPT1002 boring and loads drill rig on trailer.

1612-1618 - Collect S118-FB-20220223-01 and S118-EB-20220223-02.

1625 - Mob vehicles and equipment to S118-DPT1003 (S118-DPT-17 on field figure).

1630 - Stage trailer at boring location. All personnel off-site for the day. Jason B. mobs to SLF to off-load contained IDW purge water.

1645 - Jason B. adds ~12 gallons of IDW purge water to drum #221931 on pallet #221932.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**2/24/2021**
Signature:	**2/24/2021**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**2/24/2021**
Signature:	**2/24/2021**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-23-22 / 0700 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Jasm Bublitz

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Teamwork

Specific Training Covered: Use team lift when need and work together to prevent injury and for effeency.

Attendees

Name Printed and Employee Number:	Signature:
Jasm Bublitz	
Colten Hingst	
Aram Garcia	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage:

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:	
[signature]	02-23-22
Operator/Inspector:	Date:

KSC / NASA - SWMU 118 (KARS Park 11) 2/23/22
NS1010.01.03

Purpose : Collect DPT GW samples from SWMU 118 for PFAS/PFOA assessment.
Personnel : Jason B. (HLE), Aram G. & Colton W. (GWP)
Equipment : Geoprobe, PFAS free water, DPT rods, inner rods, HDPE tubing, expandable points, portland cement, silicon tubing, work trucks.
Weather : Hi - 79 Lo - 61 clear
0700 : All personnel on-site. Conduct TGSM & Rig Inspection.
0720 : Unload drill rig from trailer and mob to S118-DPT1000 (S118-DPT-13 on field figure).
0730 : Drillers off-site to fill water tanks w/ PFA free water at CCF hydrant.
0800 : Drillers back on-site
0825 : Arrive at S118-DPT1000 and hand auger to 5' bgs.
0840-0850 - Geoffrey Card (NASA Safety) on-site.
0850 Begin purge at S118-DPT1000-005.0 (3'-7' bgs).
0853 : Collect S118-DPT1000-005.0-20220223
0903 Begin purge at S118-DPT1000-015.0 (13'-17')
0906 Collect S118-DPT1000-015.0-20220223 & S118-FD-20220223-01
0922 Begin purge at S118-DPT1000-025.0 (23'-27')
0925 Collect S118-DPT1000-025.0-20220223
0950 Begin purge at S118-DPT1000-035.0-20220223
0953 : Collect S118-DPT1000-035.0-20220223
1000-1015 - Jason B. off-site to meet FL City Gas to mark gas line new S118-DPT12 location.
1020 : Begin purge at S118DPT1000-045.0 (screen 43'-47')
1023 : Collect S118-DPT1000-045.0-20220223
1030 : Pressure grout DPT1000 boring and mob rig to trailer to load.
1045 : Mob all vehicles and equipment to KARS Park.
1100-1130 : Drillers break for lunch.
1130 : Arrive at DPT1001 (S118-DPT-18) and hand auger to 5' bgs.
1158 Begin purge S118-DPT1001-005.0- (screen 3'-7' bgs).
1201 Collect S118-DPT1001-005.0-20220223

KSC / NASA - SWMU 118 (MARS Park) 2/23/22

NS1010.01.03

1223	Begin purge at S118-DPT1001-025.0 (screen 23'-27')
1226	Collect S118-DPT1001-025.0-20220223
1255	Begin purge at S118-DPT1001-035.0 (screen 33'-37')
1258	Collect S118-DPT1001-035.0-20220223
1322	Begin purge at S118-DPT1001-045 (screen 43'-47')
1325	Collect S118-DPT1001-045.0-20220223
1330	Drill crew pressure grouts DPT1001 boring and loads rig on trailer.
1350	Mob to DPT1002 (S118-DPT-14) and hand clear to 5' bgs.
1419	Begin purge at DPT1002-005.0 (screen 3'-7' bgs)
1422	Collect S118-DPT1002-005.0-20220223
1432	Begin purge at S118-DPT1002-015.0 (screen 13'-17' bgs)
1435	Collect S118-DPT1002-015.0-20220223
1448	Begin purge at S118-DPT1002-025 (screen 23'-27' bgs)
1451	Collect S118-DPT1002-025.0-20220223
1510	Begin purge at S118-DPT1002-035.0 (screen 33'-37')
1513	Collect S118-DPT1002-035.0-20220223
1531	Begin purge at S118-DPT1002-045.0 (screen 43'-47')
1534	Collect S118-DPT1002-045.0-20220223
1545	Drill crew pressure grouts boring and loads rig on trailer.
1612	Collect S118-EB-20220223-01 (field blank)
1618	Collect S118-EB-20220223-01 (equipment blank)
1625	Mob vehicles and equipment to S118-DPT1003 (S118-DPT-17).
1630	Stage trailer. All personnel off-site for the day, Josey B. mobs to SLF to off load IDW.
1645	Add ~12 gallons to drum # 221931 on pallet # 221932.
note	3 rinse method used during decontamination of inner rods & screen. Samples placed on ice (double bagged) following collection.



Photo 01. Photo of drill rig with crew preparing to pressure grout at S118-DPT1000.



Photo 02. Photo of drill rig and crew at S118-DPT1001.



Photo 03. Photo of drill rig at S118-DPT1002.

Daily Quality Control Report

Daily Quality Control Report	
Date:	**2/24/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	**S**	**M**	**T**	**W**	**TH**	**F**	**S**
					X		

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	63	81

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Environmental Scientist	S118	9	0	9
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**9**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S118	9	0	9
Colton Wiegmann-Hinst	DrillPro LLC	S118	9	0	9
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**18**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	2/24/2022	9	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continue collection of GW samples to be analyzed for PFAS/PFOA

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118-DPT1003-005.0-20220224	0753	PFAS/PFOA	Pending
S118-DPT1003-015.0-20220224	0806		
S118-DPT1003-025.0-20220224	0823		
S118-DPT1003-035.0-20220224	0843		
S118-DPT1003-045.0-20220224	0911		
S118-FD-20220224-01	0911		
S118-DPT1004-005.0-20220224	1011		
S118-DPT1004-015.0-20220224	1032		
S118-DPT1004-025.0-20220224	1053		
S118-DPT1004-035.0-20220224	1202		
S118-DPT1005-005.0-20220224	1358		
S118-DPT1005-015.0-20220224	1413		
S118-DPT1005-025.0-20220224	1429		
S118-FD-20220224-02	1429		
S118-DPT1005-035.0-20220224	1449		
S118-DPT1005-045.0-20220224	1516		
S118-FB-20220224-01	1540		
S118-EB-20220224-01	1545		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls.

6. Description of Work Completed

0700 - All personnel on-site. Conduct TGSM and rig inspection.

0710 - Unload drill rig from trailer and hand auger to 5' bgs at DPT1003 (**S118-DPT-17 on field figure**).

0753-0911 - Collect S118-DPT1003-005.0-20220224, S118-DPT1003-015.0-20220224, S114-DPT1003-025.0-20220224, S118-DPT1003-035.0-20220224, and S118-DPT1003-035.0-20220224 and FD-01.

0915 - Drillers pressure grout S118- DPT-1003 boring location and load drill rig on trailer.

0930 - Mob to S118-DPT1004 (**S118-DPT-15 on field figure**).

Note: Unable to access PFAS-DPT0074 due to staff meeting being conducted at pavilion and vehicles parked in boring location.

0950 - Hand auger to 5' bgs at S118-DPT1004 location.

1011-1202 - Collect S118-DPT1004-005.0-20220224, S118-DPT1004-015.0-20220224, S114-DPT1004-025.0-20220224, and S118-DPT1004-035.0-20220224.

1230-1300 - Mostly sediment being produced when purging 43'-47' bgs. Remove rods to check screen and screen plus two 5' rods missing. Drillers believe threads were stripped on lower rod causing the lose. Borehole grouted.

1315 - Due to time constraint, load drill rig on trailer and mob to FPL Solar Farm to access S118-DPT-11.

1340 - Arrive at S118-DPT1005 (**S118-DPT-11 on field figure**) and hand auger to 5' bgs.

1358-1516 - Collect S118-DPT1005-005.0-20220224, S118-DPT1005-015.0-20220224, S114-DPT1005-025.0-20220224, S118-DPT1005-035.0-20220224, FD-02, and S118-DPT1005-045.0-20220223.

1530 - Pressure grout S118-DPT1005 boring and load vehicles on trailer.

1540-1545 - Collect S118-FB-20220224-01 and S118-EB-20220224-02.

1600 - Mob vehicles out of FPL Solar Farm to S014-DPT-32 location to stage trailer.

Note: Nate Cohen with FPL provided access to S118-DPT1005 inside solar farm, escorted us to location and remained on-site until work was completed.

1615 - Stage trailer in vicinity of S014-DPT1000 (**S014-DPT-32 on field figure**). All personnel off-site for the day. Jason B. mobs to SLF to off-load contained IDW purge water.

1635 - Jason B. adds ~12 gallons of IDW purge water to drum #221931 on pallet #221932.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**2/25/2021**
Signature:	**2/25/2021**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**2/25/2021**
Signature:	**2/25/2021**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 2-24-22 / 0700 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Jasan Bublith

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): Sun Exposure

Specific Training Covered: take breaks when need, use PFAS free sunscreen a hats / long sleeves. All personnel has stop work authority

Attendees

Name Printed and Employee Number:	Signature:
Jasan Bublith	
Aram Garcia	
Colten Hirst	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
02-24-22
Operator/Inspector: Date:

KSC / NASA - SWMU 118 (KARS Park) 2/23/22
NS1010.01.03

1223	Begin purge at S118-DPT1001-025.0 (screen 23'-27')
1226	Collect S118-DPT1001-025.0-20220223
1255	Begin purge at S118-DPT1001-035.0 (screen 33'-37')
1258	Collect S118-DPT1001-035.0-20220223
1322	Begin purge at S118-DPT1001-045 (screen 43'-47')
1325	Collect S118-DPT1001-045.0-20220223
1330	Drill crew pressure grouts DPT1001 boring and loads rig on trailer.
1350	Mob to DPT1002 (S118-DPT-14) and hand clear to 5' bgs.
1419	Begin purge at DPT1002-005.0 (screen 3'-7' bgs)
1422	Collect S118-DPT1002-005.0-20220223
1432	Begin purge at S118-DPT1002-015.0 (screen 13'-17' bgs)
1435	Collect S118-DPT1002-015.0-20220223
1448	Begin purge at S118-DPT1002-025 (screen 23'-27' bgs)
1451	Collect S118-DPT1002-025.0-20220223
1510	Begin purge at S118-DPT1002-035.0 (screen 33'-37')
1513	Collect S118-DPT1002-035.0-20220223
1531	Begin purge at S118-DPT1002-045.0 (screen 43'-47')
1534	Collect S118-DPT1002-045.0-20220223
1545	Drill crew pressure grouts boring and loads rig on trailer.
1612	Collect S118-FB-20220223-01 (field blank)
1618	Collect S118-EB-20220223-01 (equipment blank)
1625	Mob vehicles and equipment to S118-DPT1003 (S118-DPT-17).
1630	Stage trailer. All personnel off-site for the day, Josun B. mobs to SLF to off load IDW.
1645	Add ~12 gallons to drum # 221931 on pallet # 221932.
note	3 rinse method used during decontamination of inner rods & screen. Samples placed on ice (double bagged) following collection.

KSC / NASA - SWMU 118 (KARS Park) 2/24/22
NS1010.01.03

Purpose:	Collect GW samples at SWMU 118 for PFAS Analysis.
Personnel:	Josun B. (HGC) Aram G & Colton W. (GWP)
Equipment:	Geoprobe, HDPE tubing, PFAS free water, Alconox, portland cement, expendable points, outer/inner DPT rods, temporary screen.
Weather:	Hi-81 Lo-63 clear
0700	All personnel on-site. Conduct TGSM & rig inspection.
0710	Unload drill rig from trailer and hand auger to 5' bgs at S118-DPT1003 (S118-DPT-17).
0750	Begin purge at S118-DPT1003-005.0- (screen 3'-7')
0753	Collect S118-DPT1003-005.0-20220224
0803	Begin purge S118-DPT1003-015.0 (screen 13'-17' bgs)
0806	Collect S118-DPT1003-015.0-20220224
0820	Begin purge at S118-DPT1003-025.0 (screen 23'-27' bgs)
0823	Collect S118-DPT1003-025.0-20220224
0840	Begin purge at S118-DPT1003-035.0 (screen 33'-37')
0843	Collect S118-DPT1003-035.0-20220224
0908	Begin purge at S118-DPT1003-045.0 (screen 43'-47' bgs)
0911	Collect S118-DPT1003-045.0-20220224 & S118-FD-20220224-01
0915	Pressure grout S118-DPT1003 boring and load rig on trailer.
0930	Mob to S118-DPT1004 (S118-DPT-15).
note	Unable to access PFAS-DPT0074 due to staff meeting being conduct at pavillion and vehicles parked in area.
0950	Hand auger to 5' bgs at S118-DPT1004.
1008	Begin purge at S118-DPT1004-005.0-20220224 (screen 3'-7' bgs).
1011	Collect S118-DPT1004-005.0-20220224
1029	Begin purge at S118-DPT1004-015.0-20220224 (screen 13'-17' bgs)
1032	Collect S118-DPT1004-015.0-20220224
1050	Begin purge at S118-DPT1004-025 (screen 23'-27' bgs)
1053	Collect S118-DPT1004-0025.0-20220224
1159	Begin purge at S118-DPT1004-035.0 (screen 33'-37')
~~1159~~ 1202	Collect S118-DPT1004-035.0-20220224

KSC / NASA - SWMU 118 (KARS) 2/24/22
NS1010.01.03

1230-1300	Unable to produce water at 43'-47' bgs. pull rod out and screen and 15' of rod did not come up. Believed stripped threads caused reason for lose.
1315:	Due to time constraint, load rig on trailer and mob to FPL Solar plant to do S118-DPT-11.
1340:	Arrive at S118-DPT1005, hand auger to 5' bgs.
1355:	Begin purge at S118-DPT1005-005.0 (screen 3'-7' bgs)
1358	Collect S118-DPT1005-005.0-20220224
1410	Begin purge at S118-DPT1005-015.0 (screen 13'-17')
1413	Collect S118-DPT1005-015.0-20220224
1426	Begin purge at S118-DPT1005-025.0 (screen 23'-27')
1429	Collect S118-DPT1005-025.0-20220224 & S118-FD-20220224-02
1446	Begin purge at S118-DPT1005-035.0 (screen 33'-37' bgs)
1449	Collect S118-DPT1005-035.0-20220224
1513:	Begin purge at S118-DPT1005-045.0 (screen 43'-47' bgs)
1516	Collect S118-DPT1005-045.0-20220224
1530:	Pressure grout boring and mob rig to trailer to load.
1540:	Collect S118-FB-20220224-01
1545:	Collect S118-EB-20220224-01
1600:	Mob vehicles and drill rig to SDI4-DPT-32 to stage trailer
note:	Nate Cohen w/ FPL escorted personnel while working at S118-DPT1005 boring.
1615:	Stage trailer. All personnel off-site for the day. Jesse B mobs to SLF to off-load IDW purge water.
1635:	Add ~12 gallons to drum # 221931 on pallet # 221932.



Photo 01. Photo of drill rig and crew at S118-DPT1004.



Photo 02. Photo of drill rig and crew at S118-DPT1005.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**3/3/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	52	76

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S118	5	0	5
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S118	5	0	5
Colton Wiegmann-Hinst	DrillPro LLC	S118	5	0	5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**10**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/3/2022	5	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**C = Continuing**	Continued collection of GW samples to be analyzed for PFAS

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
PFAS-DPT0183-055.0-20220303	1340	PFAS	Pending
S118-DPT1006-005.0-20220303	1447		
S118-DPT1006-015.0-20220303	1458		
S118-DPT1006-025.0-20220303	1512		
S118-DPT1006-035.0-20220303	1531		
S118-FD-20220303-01	1531		
S118-DPT1006-045.0-20220303	1551		
S118-FB-20220303-01	1610		
S118-EB-20220303-01	1613		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to DPT Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted DPT PFAS GW sampling at 2 DPT locations at S118, KSC, FL. Collected a total of 9 aqueous samples (including 3 quality control samples). Generated approximately 4 gallons of DPT purge water IDW, and transferred into drum 22060 on pallet 216883 at CCF, KSC, FL. All personnel offsite by 1620.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch	**3/3/2022**
Signature: Lynch, Robert Digitally signed by Lynch, Robert Date: 2022.03.03 17:35:13 -05'00'	**3/3/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/3/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.03.04 09:42:37 -05'00'	**3/3/2022**

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 03/03/2022 0730 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Robert Lynch

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:	Signature:
Aram Garcia	
Colton Hirst	

SGS North America Inc - Orlando

Chain of Custody

4405

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : **PAGE___1___OF___1____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **S118 PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	PFAS-DPT0183-055.0-20220303	3/3/22	1340	RL	GW	2		X								X	
	S118-DPT1006-005.0-20220303	3/3/22	1447	RL	GW	2		X								X	
	S118-DPT1006-015.0-20220303	3/3/22	1458	RL	GW	2		X								X	
	S118-DPT1006-025.0-20220303	3/3/22	1512	RL	GW	2		X								X	
	S118-DPT1006-035.0-20220303	3/3/22	1531	RL	GW	2		X								X	
	S118-FD-20220303-01	3/3/22	1531	RL	GW	2		X								X	
	S118-DPT1006-045.0-20220303	3/3/22	1551	RL	GW	2		X								X	
	S118-FB-20220303-01	3/3/22	1610	RL	GW	2		X								X	
	S118-EB-20220303-01	3/3/22	1613	RL	GW	2		X								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation 2	Relinquished By/Affiliation 3	Date Time:	Received By/Affiliation 4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation 6**	**Relinquished By/Affiliation 7**	**Date Time:**	**Received By/Affiliation 8**

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

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HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: [signature] Date: 3-3-2022

NASA/KSC SWMU 118 3-3-2022

NS1010.01.03

PURPOSE: Conduct DPT GW PFAS Sampling

PERSONNEL: Rob L (HGL), Aram G & Colten W (GWP)

EQUIPMENT: GeoProbe, inner/outer DPT Rods, expendable points, HDPE tubing, Silicon tubing, Portland cement, Peristaltic Pump

WEATHER: HI: 76°F LO 52°F Mostly Sunny Wind NNW 4mph

1230 - Rob L. onsite. Drillers are offsite for lunch.

1305 - Drillers onsite and began staging rig at PFAS-DPT0183 and hand cleared to 5 ft bgs

1337 - Began purging PFAS-DPT0183-055.0 (screen 53-57 ft)

1340 - Collected PFAS-DPT0183-055.0-20220303

1343 - Drillers began to pressure grout PFAS-DPT0183.

1346 - Called KSC work control for dig status. Clear to dig at Category B Sites. *NOTE- PFAS-DPT0183 was in category A.

1405 - Drillers staged drill rig at S118-DPT1006 (S118-DPT12) and hand augered to 5 ft bgs. - Issues hand augering due to rock/concrete.

1444 - Began pursing S118-DPT1006-005.0 (screen 3-7)

1447 - Collected S118-DPT1006-005.0-20220303

1455 - Began pursing S118-DPT1006-015.0-20220303 (screen 13-17)

1458 - Collected S118-DPT1006-015-20220303

1509 - Began purging S118-DPT1006-025.0 (23-27 ft)

1512 - Collected S118-DPT1006-025.0 20220303

1528 - Began Purging S118-DPT1006-035.0 (screen 33-37 ft)

1531 - Collected S118-DPT1006-035.0-20220303 and S118-FD-20220303-01

1548 - Began purging S118-DPT1006-045.0 (43-47 ft)

1551 - Collected S118-DPT1006-045.0-20220303

1554 - Drillers began to pressure grout S118-DPT1006

1610 - Collected ~~S118~~ RL RL S118-FB-20220303-01

1613 - Collected S118-EB-20220303-01

1620 - All personnel offsite.

1635 - Disposed of approx. 8-10 gallons of DPT Purge water into Drum 226060

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	Daily Quality Control Report
Date:	**3/4/2022**
NASA Remediation Project Manager:	Ryan O'Meara
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	54	76

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S118	2	0	2
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**2**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Aram Garcia	DrillPro LLC	S118	2	0	2
Colton Wiegmann-Hinst	DrillPro LLC	S118	2	0	2
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**2**	**TOTAL HOURS WORKED**			**4**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7720	2/21/2022	3/4/2022	2	0	0

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
DPT GW Sampling Collection	**F = Finish**	Finished collection of GW samples to be analyzed for PFAS

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118-DPT1004-045.0-20220304	0751	PFAS	Pending
PFAS-DPT0074-055.0-20220304	0846		
PFAS-FD-20220304-01	0846		
S118-FB-20220304-01	0905		
S118-EB-20220304-01	0908		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to DPT Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted DPT PFAS GW sampling at 2 DPT locations at S118, KSC, FL. Collected a total of 5 aqueous samples (including 3 quality control samples). Generated approximately 1 gallon of DPT purge water IDW, and transferred into drum 22060 on pallet 216883 at CCF, KSC, FL. All personnel offsite by 0915 and mobilized to S014 to continue DPT GW sampling.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch	**3/4/2022**
Signature: Lynch, Robert Digitally signed by Lynch, Robert Date: 2022.03.04 15:00:49 -05'00'	**3/4/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**3/4/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.03.04 15:11:39 -05'00'	**3/4/2022**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 03/04/2022 0730 Client: KSC

Location: NASA/KSC - SLF/Industrial Area Job No.: NS1010.01.03

Meeting/training conducted by: Robert Lynch

Work Activities: DPT Groundwater Sampling

Safety / Training Topics Presented

Chemical Hazards: Possible PFAS/PFOA

Physical Hazards: Slips trips falls,inclement weather,pinch points,biologicals,traffic,sun exposure,heat stress,struck by,teamwork,PPE

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:	Signature:
Colten Hirst	
Aram Garcia	

SGS North America Inc - Orlando

Chain of Custody

4405

Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : **PAGE___1___OF___1____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch **Sampler 2:**

Project Information

Project Name: **S118 PFAS Assessment**

Street **Kennedy Space Center**

City **Merritt Island** **State** **FL**

Project # **NS1010.01.06**

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-DPT1004-045.0-20220304	3/4/22	0751	RL	GW	2		X								X	
	PFAS-DPT0074-055.0-20220304	3/4/22	0846	RL	GW	2		X								X	
	PFAS-FD-20220304-01	3/4/22	0846	RL	GW	2		X								X	
	S118-FB-20220304-01	3/4/22	0905	RL	GW	2		X								X	
	S118-EB-20220304-01	3/4/22	0908	RL	GW	2		X								X	

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____

vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
		6	7		8

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Direct-Push Rig Inspection Checklist

Project Name/Number: PFAS Assessment/NS1010.01.03

Make/Model Number: Geoprobe 7720

Equipment Number: 286

Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.	OK ✓	Tracks in good condition.	OK ✓
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	OK ✓	Tires fully inflated and in good condition.	OK ✓
Rig controls clearly labeled and in working condition.	OK ✓	Back-up alarm working.	OK ✓
Rig Kill Switch in working order.	OK ✓	First Aid Kit accessible and stocked.	OK ✓
All of the Rig's connections tightened and leak-free.	OK ✓	Fire Extinguisher accessible and fully charged.	OK ✓
Parking brake functions properly.	OK ✓	Eye Wash full and accessible.	OK ✓
Steering controls in working order and clear of obstacles.	OK ✓	Hearing protection available and is being used during hammering.	OK ✓
Copy of the manual for all drilling equipment available.	OK ✓	All overhead and underground hazards identified.	OK ✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
03-04-22
Operator/Inspector: Date:

NASA/KSC SWMU 118 3/4/2022
NS1010.01.03

PURPOSE Conduct DPT GW PFAS sampling

PERSONNEL Robert (HGL) Aram G. & Colton W (GWP)

EQUIPMENT Geoprobe, inner/outer rods, expendable point, HDPE Tubing, Peristaltic pump, Portland canteen, field truck

WEATHER Hi - 76° F Lo - 54° F Mostly Sunny W N 8 mph

0730 - All personnel onsite. Verified dig status on FPR website (green). Conducted TGSM & Rig Safety Inspection. Drillers staged rig at SWMU-118-DPT1004

0748 - Began purging SWMU-118-DPT1004-045.0 (43-47')

0751 - Collected SWMU-118-DPT1004-045.0-20220304

0754 - Drillers began to pressure grout SWMU-118-DPT1004.

0811 - Drillers staged rig at PFAS-DPT0074 and hand cleared to 5 ft bgs

0843 - Began purging PFAS-DPT0074-055.0 (screen 53-57 ft)

0846 - Collected PFAS-DPT0074-055.0-20220304 and ~~SWMU~~ PFAS-FD-20220304-01

0844 - Drillers began to pressure grout PFAS-DPT0074

0905 - Collected SWMU-118-FB-20220304-01

0908 - Collected SWMU-118-EB-20220304-01

0915 - All personnel offsite and mobilized to SWMU-014.

Generated approx. 1 gallon of IDW DPT purge water.

Re

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**5/16/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
		X					

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	72	86

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Robert Lynch	Staff Scientist	S118	2	2	4
Justin Vojak	Staff Scientist	S118	2	2	4
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**8**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
SW Sampling Collection	**S**	Sampled 3 SW Locations

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118-SW0005	1405	PFAS	Pending
S118-SW0006	1417		
S118-SW0007	1427		
S118-FD	1427		
S118-FB	1433		
S118-EB	1438		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Chemical Exposure, Traversing to SW Locations, Slips, Trips and Falls, Proper PPE.

6. Description of Work Completed

Conducted PFAS SW sampling at 3 SW locations at S118, KSC, FL. Collected a total of 6 aqueous samples (including 3 quality control samples). See COC for sample ID and times and attached field map for sample locations.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch	**5/16/2022**
Signature: Lynch, Robert Digitally signed by Lynch, Robert Date: 2022.05.16 16:15:34 -04'00'	**5/16/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**5/16/2022**
Signature: Jellett, Tim Digitally signed by Jellett, Tim Date: 2022.05.16 16:22:54 -04'00'	**5/16/2022**

HGL
HydroGeologic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 05/16/2022 1350

Client: NASA/KSC

Location: S118, KSC, FL

Job No.: NS1010.01.13

Meeting/training conducted by: Robert Lynch

Work Activities: SW Sampling

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Slips, Trips, and Falls (uneven terrain), Biologicals, Heat Stress

Specific Safety Topic(s): Be mindful of your step near swale/ditch when sampling. Be mindful of traffic near road.

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
Robert Lynch	
Justin Vojak	

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
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www.sgs.com

SGS - ORLANDO JOB # : **PAGE__1___OF___1____**

SGS - ORLANDO Quote # **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.

Address: 2405 N. Courtney Parkway, STE 203

City: Merrit Island **State: FL** **Zip:32937**

Project Contact: Denise Rivers **Email:drivers@hgl.com**

Phone #:910-233-8460

Sampler(s) Name(s) (Printed)
Sampler 1: Robert Lynch **Sampler 2: Justin Vojak**

Project Information

Project Name: S118 PFAS SW Sampling

Street Kennedy Space Center

City Merritt Island **State FL**

Project # NS1010.01.06

Fax #

Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX										LAB USE ONLY
	S118-SW0005-000.0-20220516	5/16/22	1405	RL	SW	2		X								X										
	S118-SW0006-000.0-20220516	5/16/22	1417	RL	SW	2		X								X										
	S118-SW0007-000.0-20220516	5/16/22	1427	RL	SW	2		X								X										
	S118-FD-20220516-01	5/16/22	1427	RL	SW	2		X								X										
	S118-FB-20220516-01	5/16/22	1433	RL	WW	2		X								X										
	S118-EB-20220516-01	5/16/22	1438	RL	WW	2		X								X										

Turnaround Time (Business days)

X **10 Day (Business)** **Approved By: / Date:**
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ **COMMERCIAL "A" (RESULTS ONLY)**
- ☐ **COMMERCIAL "B" (RESULTS PLUS QC)**
- ☐ **REDT1 (EPA LEVEL 3)**
- ☐ **FULLT1 (EPA LEVEL 4)**
- ☐ **EDD'S**

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation 2	Relinquished By/Affiliation 3	Date Time:	Received By/Affiliation 4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation 6**	**Relinquished By/Affiliation 7**	**Date Time:**	**Received By/Affiliation 8**

Lab Use Only : **Cooler Temperature (s) Celsius (corrected):**_____

http://www.sgs.com/en/terms-and-conditions

NASA / KSC SWMU 118 5-16-2022

NS1010.01.13

PURPOSE: Conduct SW sampling for PFAS

PERSONNEL: Rob L., Justin V.

EQUIPMENT: SW grab sample pole, Liquinox, PFAS-free water, HDPE bottles

WEATHER: Hi 86°F Lo 72°F Mostly sunny

Wind NE 5 mph

1350 - All personnel onsite. Conducted TGSM.

1405 - Collected 5118-SW0005

1417 - Collected 5118-SW0006

1427 - Collected 5118-SW0007 and FD

1433 - Collected Field Blank (5118-FB-20220516-01)

1438 - Collected Equipment Blank (5118-EB-20220516-01)

1445 - All personnel offsite.

- NOTE, grab sampler was decon'ed in-between samples.

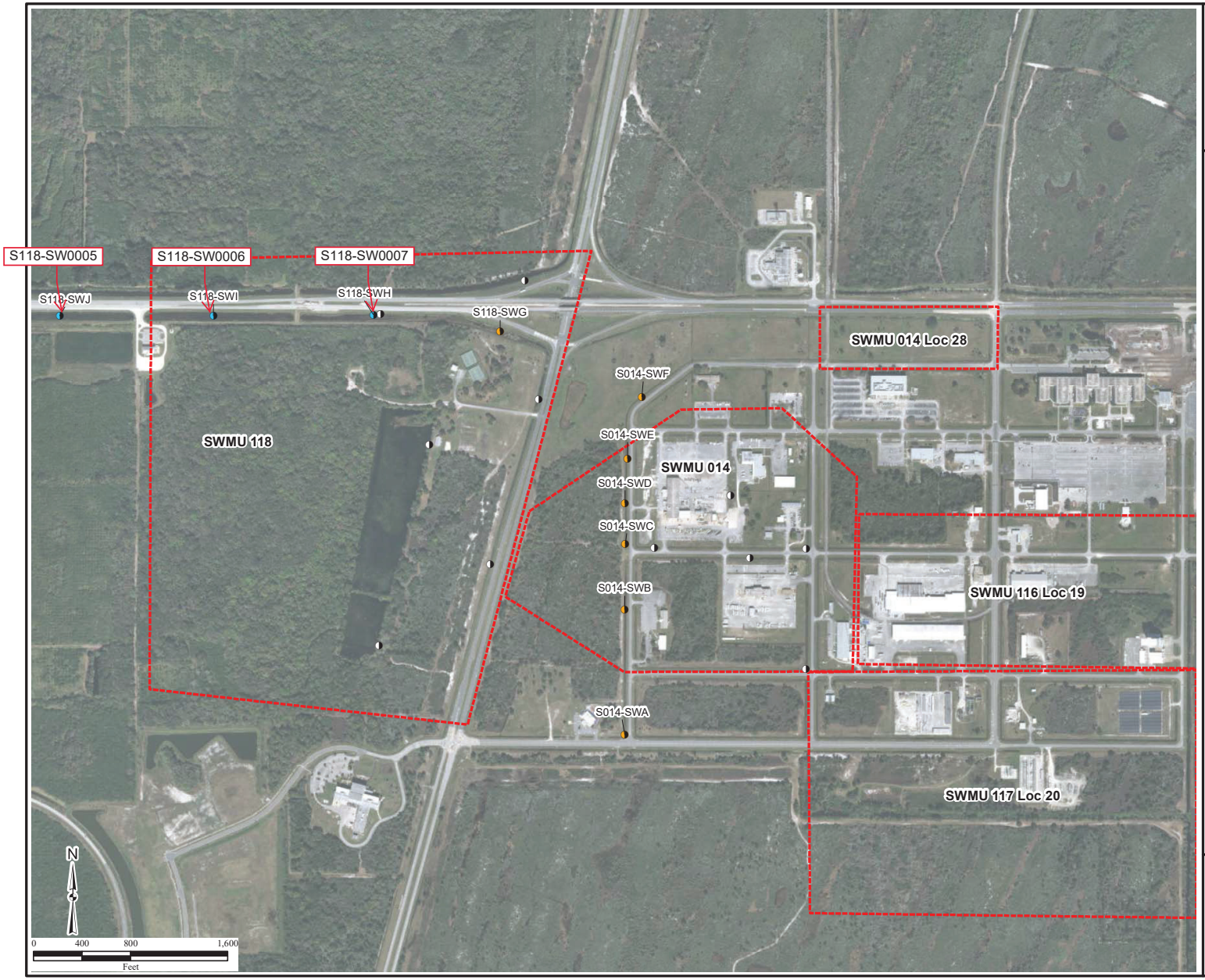


Figure x
SWMU 014 and SWMU 118 Proposed Surface Water Sample Locations

Legend

- Existing Surface Water Sample
- Proposed Surface Water Sample
- Proposed Time Series Surface Water Sample
- SWMU Boundaries

Notes:
SWMU=solid waste management unit

\\srv-gst-01\hglgis\KSC_NS1002_Misc_Figures\PFOS_Sites\(x)SWMU014-118_PropSamp_SW.mxd
4/26/2022 TB
Source: HGL,
ArcGIS Online Imagery



S118-SW0005. Photo is facing west.



S118-SW0006. Photo is facing east.



S118-SW0007. Photo is facing east.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**6/5/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
	X						

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Min.	Max.
	73	86

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
		X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Barry Huston	Field Technician	KARS	1	0	1
Gary Parker	Field Technician	KARS	1	0	1
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**2**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collected Time SeriesSurface Water Samples	**S/F**	Collected time series surface water samples from SWMU 118

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118-SW0005-000.0-20220605	0753	PFAS/PFOA	Pending
S118-SW0005-000.0-20220605	0803		
S118-SW0005-000.0-20220605	0813		
S118-EB-20220605-01	0830		
S118-FB-20220605-01	0835		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, COVID-19, Traversing to Wells, Slips, Trips and Falls, Struck By.

Daily Quality Control Report

6. Description of Work Completed

0745 - All personnel on-site. Conduct TGSM.

0753-0813 - Collect S118-SW0005-20220605, S118-SW0006-20220605, and S118-SW0007-20220605.

0830-0835 - Collect S118-EB-20220605-01 and S118-FB-20220605-01

0845 - All personnel off-site for the day.

Note: No water flow observed in swale during sampling.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**6/6/2022**
Signature:	**6/6/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett	**6/6/2022**
Signature:	**6/6/2022**

SGS North America Inc - Orlando

Chain of Custody

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TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Information

Company Name: HGL INC.

Address: 2405 N COURTENAY PKWY SUITE 203

City: MERRIT IS. State: FL Zip: 32937

Project Contact: DENISE RIVERS Email: drivers@hgl.com

Phone #: 910 233 8460

Sampler(s) Name(s) (Printed)
Sampler 1: B HUSTON Sampler 2:

Project Information

Project Name: 5118 PFAS SW SAMPLING

Street KENNEDY SPACE CENTER

City MERRIT IS. State FL

Project # NS1010.01.06

Fax #

Client Purchase Order #

Analytical Information

SEE ATTACHED PRODUCTS SHEET

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	Analytical Information	LAB USE ONLY
	5118-SW0005	5-16-22	7:53	BH	SW	2		X								X	
	5118-SW0006	5-16-22	8:03	BH	SW	2		X								X	
	5118-SW0007	5-16-22	08:13	BH	SW	2		X								X	
	5118-~~SW~~FB-20220605-01	5-16-22	0835	BH	WW	2		X								X	
	5118-EB-20220605-01	5-16-22	0830	BH	WW	2		X								X	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	[illegible] /HGL	6-6-22 11:37	2	3		4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____

http://www.sgs.com/en/terms-and-conditions

HGL

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 6-5-22 0:730 Client: NASA

Location: S118 Job No.: X5101001

Meeting/training conducted by: B Huston

Work Activities: SURFACE WATER SAMPLING

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: SLIP, TRIP, FALL, BIOLOGICAL HAZARDS

Specific Safety Topic(s): HEAT STRESS, HYDRATION

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
Pete Parker	

NASA / KSC SWMU 118 6-5-22

Purpose : Collect time series surface water samples after ~1" rain event on 6-4-22.

Personnel : Barry H & Pete P.

Equipment: PFAS free water, decontamination supplies, surface water (Dipper) sampler, work trucks, SSHP, flyers, sample bottleware (provided by lab).

Weather : HI - 86° LO - 73 clear.

0745 : All personnel on-site. Conduct TGSM.

0753 : Collect SI18 - SW0005 sample.

0803 : Collect SI18 - SW0006 sample.

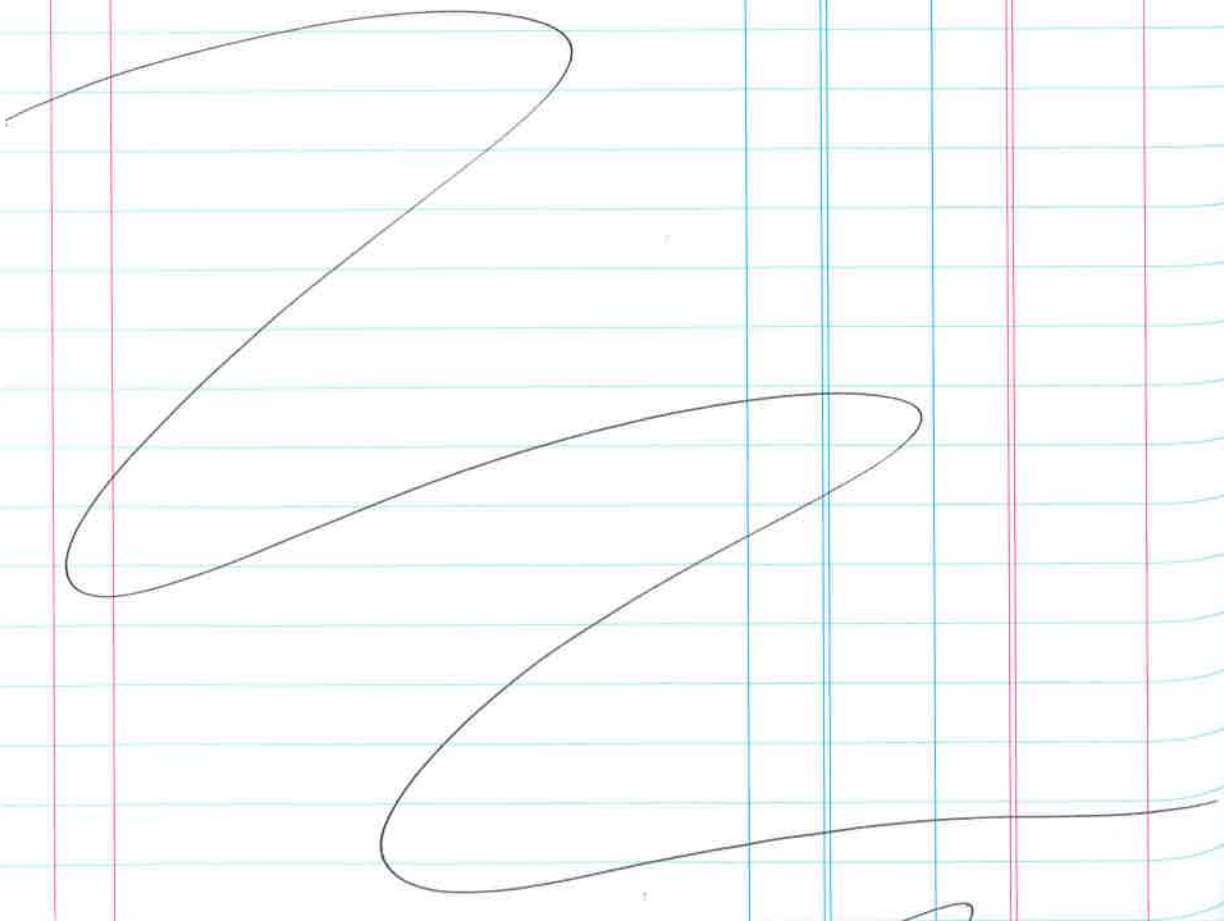
0813 : Collect SI18 - SW0007 sample.

0830 : Collect SI18 - EB - 20220605-01 (equipment blank).

0835 : Collect SI18 - FB - 20220605-01 (field blank).

0845 : All personnel off-site for the day.

Note: No water flow in ditch observed.



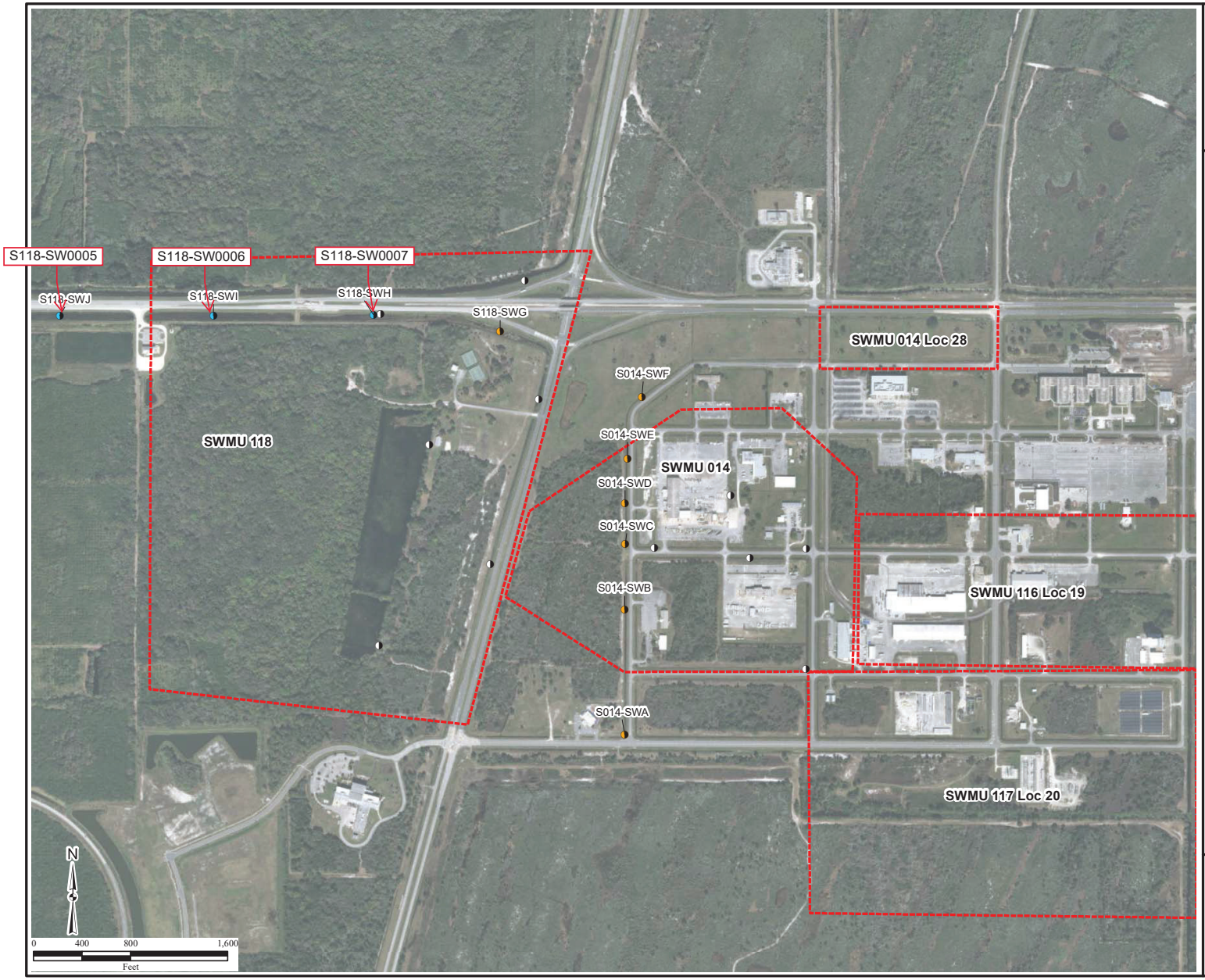


Figure x
SWMU 014 and SWMU 118 Proposed Surface Water Sample Locations

Legend

- Existing Surface Water Sample
- Proposed Surface Water Sample
- Proposed Time Series Surface Water Sample
- SWMU Boundaries

Notes:
SWMU=solid waste management unit

\\srv-gst-01\hglgis\KSC_NS1002_Misc_Figures\PFOS_Sites\(x)SWMU014-118_PropSamp_SW.mxd
4/26/2022 TB
Source: HGL,
ArcGIS Online Imagery

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**6/16/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	78			89			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Associate Scientist Leader	S118	1	0	1
William Duttenhaver	Field Technician	S118	1	0	1
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**2**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used
Topcon	06/16/22	No	No	N/A	0.5

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
SW Sampling Collection	**F = Finish**	Sampled 1 SW Location

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118 - SW0008, S118 - FD - 01	0850	PFAS	Pending
S118 - FB - 01	0855		
S118 - EB - 01	0900		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Chemical Exposure, Traversing to SW Locations, Slips, Trips and Falls, Proper PPE, Heat Stress.

6. Description of Work Completed

0700 - Conducted TGSM at field office. Load truck and prep to mob to site.

0830 - Mob to site. Use Topcon to navigate to SW sample location. See attached paperwork for sampling info.

0930 - Secured site. All employees off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Dustin Lupis	**6/16/2022**
Signature: Dustin Lupis	**6/16/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**6/16/2022**
Signature:	**6/16/2022**

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS _ ORLANDO JOB #: **PAGE___1__OF___1__**

SGS - ORLANDO Quote: **SKIFF #**

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway STE. 203
City: Merritt Island **State:** FL **Zip:** 32953
Project Contact: Denise Rivers **Email:** drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: William Duttenhaver **Sampler 2:** Dustin Lupis

Project Information

Project Name : SWMU S118
Street Kennedy Pkwy.
City Kennedy Space Center **State** FL
Project # NS1010.01.13
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION: TOTAL # OF BOTTLES	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL - 24 Analytes + GEN X	LAB USE ONLY
	S118 - SW0008 - 000.0 - 20220616	6/16/22	8:50	WD	SW	2	X								X	
	S118 - FD - 20220616 - 01	6/16/22	8:50	WD	SW	2	X								X	
	S118 - FB - 20220616 - 01	6/16/22	8:55	WD	WW	2	X								X	
	S118 - EB - 20220616 - 01	6/16/22	9:00	WD	WW	2	X								X	

Turnaround Time (Business days)

Std. 10 Business Days **Approved By: / Date/Rush Code:**
7 Day *RUSH* _____
5 Day *RUSH* _____
3 Day *EMERGENCY* _____
2 Day *EMERGENCY* _____
1 Day *EMERGENCY* _____
Other _____
Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2	3		4
Relinquished by/Affiliation	**Date Time:**	**Received By/Affiliation**	**Relinquished By/Affiliation**	**Date Time:**	**Received By/Affiliation**
5		6	7		8

Lab Use Only : **Custody Seal in Place: Y N** **Temp Blank Provided: Y N** **Preserved Where Applicable: Y N** **Total # of Coolers:_____Cooler Temperature (s) Celsius:_____**

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 06/16/22 0700 Client: KSC/NASA

Location: SWMU 5118 Job No.: NS1010.01.13

Meeting/training conducted by: Dustin Lupis

Work Activities: Collect SW Samples for PFAS Assessment

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: pinch points, biologicals, slips, trips, falls, COVID-19, Heat Stress

Specific Safety Topic(s): Heat Stress + dehydration

Specific Training Covered: Stay hydrated. Take breaks as needed.

Attendees

Name Printed and Employee Number:	Signature:
William Duttenhaver	
Dustin Lupis	

KSC/NASA SWMU 5118 NS1010.01.13 06/16/22

Purpose- Collect SW samples for PFAS/PFOA
personnel- Dustin L, Parker D.
Equipment - work truck, TOPcon, Sample cup, Decon equipment
Weather- Hi -89° Lo - 78° sunny .
0700 - Conducted TGSM at field office, Load work truck.
0830 - Mob to site. Use Topcon to navigate to SW location,
0850 - Collect sample 5118-SW0008-000.0-20220616 and
5118-FD-20220616-01 for PFAS/PFOA. Decon equipment
0855 - collect sample 5118-FB-20220616-01
0900 - Collect sample 5118-EB-20220616-01
0910 - Collect SW sample location TOPcon. Load truck, secure site.
0930 - Site is secure. All employees off site.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**6/17/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	KSC PFAS Assessment
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	78			90			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
		X					

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Associate Scientist Leader	S118	1	0	1
William Duttenhaver	Field Technician	S118	1	0	1
TOTAL HGL PERSONNEL ONSITE		**2**	**TOTAL HOURS WORKED**		**2**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used
Topcon	06/17/22	No	No	N/A	0.5

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
SW Sampling Collection	**F = Finish**	Sampled 3 SW Location's

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Sample Time	Analysis	Results - Detected / Not Detected
S118 - SW0005 and FD - 01	1110	PFAS	Pending
S118 - SW0006	1120		
S118 - SW0007	1125		
S118 - FB - 01	1130		
S118 - EB -01	1135		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Chemical Exposure, Traversing to SW Locations, Slips, Trips and Falls, Proper PPE, Heat Stress.

6. Description of Work Completed

0730 - Conducted TGSM at field office. Load truck and prep to mob to site.

1030 - Mob to site. Use Topcon to navigate to SW sample locations. See attached paperwork for sampling info.

1150 - Secured site. All employees off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Dustin Lupis	**6/17/2022**
Signature: Dustin Lupis	**6/17/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**6/17/2022**
Signature:	**6/17/2022**

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SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information		Project Information	
Company Name: HGL inc		Project Name: SWMU 5118	
Address: 2405 N. Courtney Pkwy STE. 203		Street: Kennedy Pkwy	
City: Merritt Island	State: FL Zip: 32953	City: Kennedy Space Center	State: FL
Project Contact: Denise Rivers	Email: drivers@hgl.com	Project # NS1010.01.13	
Phone #: 910-233-8460		Fax #	
Sampler(s) Name(s) (Printed) Sampler 1: W. Dittenhaver Sampler 2: D. Lyons		Client Purchase Order #	

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	Analytical: LCMS+GENX	LAB USE ONLY
	5118-SW0005-000.0-20220617	6/17/22	1110	WD	SW	2		X								X	
	5118-FD-20220617-01	6/17/22	1110	WD	SW	2		X								X	
	5118-SW0006-000.0-20220617	6/17/22	1120	WD	SW	2		X								X	
	5118-SW0007-000.0-20220617	6/17/22	1125	WD	SW	2		X								X	
	5118-FB-20220617-01	6/17/22	1130	WD	WW	2		X								X	
	5118-EB-20220617-01	6/17/22	1135	WD	WW	2		X								X	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	6-17-22 1535	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____

http://www.sgs.com/en/terms-and-conditions

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 06/17/22 0730 Client: KSC/NASA

Location: SWMU 5118 Job No.: NS1010.01.13

Meeting/training conducted by: Dustin Lupis

Work Activities: Collect surface water samples for PFAS Analysis

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: pinch points, slips, trips, falls, biologicals, struck by, heat stress

Specific Safety Topic(s): Biologicals - Alligators

Specific Training Covered: Be mindful of surroundings, use buddy system.

Attendees

Name Printed and Employee Number:	Signature:
Dustin Lupis	
William. Duttenhaver	

KSC/NASA SWMU S118 KS1010.01.13 06/17/22

purpose- Collect SW Samples for PFAS/PFOA
personnel- Dustin L., Parker D.
Equipment- Work truck, TOPCON, Sample Cup, decon equipment
Weather- Hi- 90° Lo- 78° Sunny
0930- Conducted TGSM at Cape Field office. Load work truck
1030- Mob to site. Use TOPCON to navigate to SW Sample locations.
1110- Collect S118-SW0005-000.0-20220617 and S118-FD-20220617-01 for PFAS. Collect location on TOPCON.
1120- Collect S118-SW0006-000.0-20220617 for PFAS Collect location coordinates on TOPCON.
1125- Collect S118-SW0007-000.0-20220617 for PFAS collect location coordinates on TOPCON
1130- Collect S118-FB-2022-0617-01.
1135- Collect S118-EB-2022 0617-01, ~~after~~ on
Note: Decon sample cup in between each Sample. Placed all samples on ice in cooler.
1145- Packed gear into truck. Secure site.
1150- Site is secure. All employees off site.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	Daily Quality Control Report
Date:	**6/22/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0097
Project Name:	PFAS Site Charecterization
Project No.	NS1010.01.03

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast	Rain / Fog
			X		
Temp	Min.		Max.		
	70		86		
Wind	Still	Moderate	High	Gust	
		X			
Humidity	Dry	Moderate	High	Rainfall	
			X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Justin Vojak	Staff Scientist	SWMU 118/014	11.5	0	11.5
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**11.5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Mikey Ritter	DrillPro	SWMU014/118	9.5	0	9.5
Samuel Johnson	DrillPro	SWMU014/118	9.5	0	9.5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**2**	**TOTAL HOURS WORKED**			**19**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geoprobe 7822	6/14/2022-	6/22/2022	8	0	1.5

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Quality Control Report

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collect DPT Groundwater Samples	**C = Continuing**	Groundwater sample collection for plume delineation/assessment.

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Time	Analysis	Results - Detected / Not Detected
S118-DPT1009-005.0-20220622	1013		
S118-DPT1009-015.0-20220622	1029		
S118-DPT1009-025.0-20220622	1044		
S118-DPT1009-035.0-20220622	1058		
S118-DPT1009-045.0-20220622	1115		
S118-DPT1010-005.0-20220622	1413		
S118-DPT1010-015.0-20220622	1426		
S118-DPT1010-025.0-20220622	1438		
S118-DPT1010-035.0-20220622	1453		
S118-DPT1010-045.0-20220622	1510		
S118-FD-20220622-01	1510		
S118-EB-20220622-01	1536		
S118-FB-20220622-01	1541		
S014-DPT1010-015.0-20220622	1630		
S014-DPT1010-025.0-20220622	1640		
S014-DPT1010-035.0-20220622	1654		
S014-DPT1010-045.0-20220622	1713		
S014-FD-20220622-01	1713		
S014-EB-20220622-01	1718		
S014-FB-20220622-01	1723		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, COVID-19, Slips, Trips and Falls, Inclement Weather, Sun Exposure, Traffic, Struck by, Heat Stress, Team Work, PPE

6. Description of Work Completed

0822- Arrive to site, safety meeting and rig inspection.

0830-Arrive to solar farm, N. Cohen (FL Light and Power) onsite.

0845-0930- Informed there are two high voltage power mains in area of boring. See field notes for step off details.

0955- Begin S118-DPT1009 @ DPTH on figure. Hand clear to 5'.

1010-1115- Purge and collect S118-DTP1009-005.0-045.0. See field notes for details.

1125- Pressure grout boring S118-DPT1009

1200- Begin S118-DPT1010 at DPTI. Hard clear to 5'

1240-1405- Rig service. Rig would not start/hammer is inoperable.

1410-1510- Purge and collect S118-DTP1010-005.0-045.0. See field notes for details.

1523- Pressure grout boring S118-DPT1010

1605- Begin S014-DPT1020 @ DPTA. HA to 5'.

1615- Interval 3-7' dry, no sample.

1620- Interval 8-12' dry, no sample.

1606- Collect S114-EB-20220615-01

1627-1710- Purge and collect S014-DTP1020-005.0-045.0. See field notes for details.

1740- Mobe to CCF, no spill palllets avaible. ~6 gal of IDW generated.

1800- Mobe to field office

1815- Arrive to field office. QC and pack samples.

1900- Depart field office

1915- Stage samples at Merritt Island office for courier pick up.

1930- End of day.

Daily Quality Control Report

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Justin Vojak	**6/22/2022**
Signature: *Justin Vojak*	**6/22/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**6/22/2022**
Signature:	**6/22/2022**

HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- ☑ Tailgate (daily)
- ☐ Activity Hazard Analysis
- ☐ Pre-Task Hazard Analysis (prior to new task or operation)
- ☐ Site Safety Orientation (new personnel)
- ☐ Supervisor's (monthly)
- ☐ Supervisor's (weekly)
- ☐ UXO Awareness
- ☐ Asbestos Awareness
- ☐ Health and Safety Plan Addendum: _____
- ☐ Other: ___

Date/Time: 6/22/22

Client: NASA

Location: KSC-SWMU118

Job No.: NS1010.01.03

Meeting/training conducted by: J. Vojak

Work Activities: DPT GW Sampling

Safety / Training Topics Presented

Chemical Hazards: PFAS

Physical Hazards: Wildlife, Slip, Trips, Fall, Sun Exposure, Heat Stress

Specific Safety Topic(s): Vehicle safety while working on road way.

Specific Training Covered: Proper Lifting Technique

Attendees

Name Printed and Employee Number:	Signature:
J. Vojak	
Mickey Rifer	
Samuel Johnson	

HydroGeoLogic, Inc
Exceeding Expectations

Daily Drill Rig Inspection Checklist

Project Name/Number: PFAS Site Assment –

Make/Model Number: 7822

Equipment Number: 195

Hours/Mileage: NA

Rig clean and free of soils, oils, and other debris.	✓	Tracks in good condition.	–
All hydraulic fittings and hoses free of damage, tightened, and not leaking.	✓	Tires fully inflated and in good condition.	NA
Rig controls clearly labeled and in working condition.	✓	Back-up alarm working.	NA
Rig Kill Switch in working order.	✓	First Aid Kit accessible and stocked.	✓
All of the Rig's connections tightened and leak-free.	✓	Fire Extinguisher accessible and fully charged.	✓
Parking brake functions properly.	NA	Eye Wash full and accessible.	–
Steering controls in working order and clear of obstacles.	NA	Hearing protection available and is being used during hammering.	✓
Copy of the manual for all drilling equipment available.	✓	All overhead and underground hazards identified.	✓

√ = OK
N/A = Not Applicable
X = Defective

These items are to be checked each shift before operating this piece of equipment.
Report all items requiring repair to supervisor.

Notes:
Operator/Inspector: Mickey Riff / J. Vojak Date: 6-22-21

NASA/KSC SWMU 118 6/22/22

Scope: PFAS DPT Sampling

Crew: J. Vojak (HGL), M. Ritter, S. Johnson (GWP)

Equipment: Geoprobe DPT track rig, Perry Pump, HDPE Tubing, work trucks

Weather: 70-86°F, Clear

0800- Travel to site.

0805- Stop for ice

0810- Mobe to DPTB in Industrial area

0822- Arrive GWP has rig located. Mobe to solar farm

0830- Arrive to solar farm. N. Cohen onsite. Enters solar farm.

0845- Informed there are (2) high voltage power lines in the vicinity of boring location

0900- Review as builts. Original boring location has no conflict but N. Cohen (FL Light & power) request boring to be moved.

0915- Move boring ≈50' N. Contact H. Fowler. move/offset is approved.

0930- N. Cohen stops work until given permission to proceed by his supervisor. He was provide the approved Sunshine 811 ticket & KSC dig permit.

0940- JV/GWP mobe to SS118-DPTH.

0955- Begin SS118-DPT10~~20~~09JV @ DPTH on Figure. Hand clear to 5'

1010- Begin purge for SS118-DPT10~~20~~09JV-005.0. Screen (3->')

1013- Collect SS118-DPT10~~20~~09JV-005.0-20220622

1024- Begin purge for SS118-DPT10~~20~~09JV-015.0- Screen (13-17')

1027- Collect SS118-DPT10~~20~~09JV-015.0-20220622

1040- Begin purge for SS118-DPT10~~20~~09JV-025.0. Screen (23-27')

1044- Collect SS118-DPT10~~20~~09JV-025.0-20220622

NASA/KSC SWMU 118 6/22/22

0955 - Begin purge for S118-DPT10~~20~~09-JV-035.0 - Screen (33-37')
1058 - Collect S118-DPT10~~20~~09-JV-035.0 - 20220622
1112 - Begin purge for S118-DPT10~~20~~09-JV-045.0 - Screen (43-47')
1115 - Collect S118-DPT10~~20~~09-JV-045.0 - 20220622
1125 - Pressure grout boring DPT10~~20~~09 JV
1135 - Rig down & load rig.
1145 - Mobe to DPTI (solar farm)
1200 - Begin S118-DPT10~~20~~10-JV @ DPTI on figure. Hand clear to 5'
1240 - Rig service. Rig unable to start/hammer.
1405 - Rig repaired. Resume drillout.
1410 - Begin purge for S118-DPT10~~2~~1-JV-005.0. Screen (3-7')
1413 - Collect S118-DPT10~~2~~1-JV-005.0-20220622
1423 - Begin purge for S118-DPT10~~2~~1-JV-015.0. Screen (13-17')
1426 - Collect S118-DPT10~~2~~1-JV-015.0-20220622
1435 - Begin purge for S118-DPT10~~2~~1-JV-025.0 - Screen (23-27')
1438 - Collect S118-DPT10~~2~~1-JV-025.0-20220622
1450 - Begin purge for S118-DPT10~~2~~1-JV-035.0 - Screen (33-37')
1453 - Collect S118-DPT10~~2~~1-JV-035.0-20220622
1507 - Begin purge for S118-DPT10~~2~~1-JV-045.0 - Screen (43-47')
1510 - Collect S118-DPT10~~2~~1-JV-045.0-20220622 & S118-~~DPT1001~~-JV-FD-20220622
1523 - Pressure grout boring DPT10~~2~~1-JV
1535 - Rig down & load vehicle.
1536 - Collect S118-EB-20220622-01
1541 - Collect S118-FB-20220622-01
1550 - Mobe to DPTA (SWMU 014)
1605 - Begin S~~118~~014-JV-DPT10~~22~~20-JV @ DPTA on Figure. Hand clear to 5'
1615 - Interval (3'-7') dry. No sample
1620 - Interval (8-12') dry. No sample.
1627 - Begin purge for S014-DPT10~~22~~20-JV-015.0-20220622. Screen (13-17')
1630 - Collect S014-DPT10~~22~~20-015.0-20220622

NASA/KSC SWMU 118/014 6/22/22

1637 - Begin purge for SO14-DPT1022-20JV-025.0. Screen (23-27')
1640 - Collect SO14-DPT1022-20JV-025.0-20220622
1651 - Begin purge for SO14-DPT1020-035.0. Screen (33-37')
1654 - Collect SO14-DPT1020-035.0-20220622
1510 - Begin purge for SO14-DPT1020-045.0. Screen (43-47')
1513 - Collect SO14-DPT1020-045.0-20220622 & SO14-FD-20220622-01JV
1718 - Collect SO14-EB-20220622-01
1723 - Collect SO14-FB-20220622-01
1730 - Rig down.
1740 - Mobe to CCF.
1750 - No spill pallets available ≈ 6 gallons of IDW generated.
1800 - Mobe to field office.
1815 - QC & pack samples.
1900 - Mobe to Merritt Island office.
1915 - Arrive to Merritt Island office, stage samples
1930 - End of day.

Daily Quality Control Report

HGL HydroGeoLogic, Inc Exceeding Expectations	**Daily Quality Control Report**
Date:	**6/23/2022**
NASA Remediation Project Manager:	Natasha Darre
HGL Program Manager	Janardan Patel
HGL Project Manager:	Howard Fowler
Contract No.	80KSC019D0012
Task Order No.	80KSC021F0168
Project Name:	PFAS Assessment
Project No.	NS1010.01.13

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun		Clear	Overcast		Rain	Fog
			X				
Temp	Min.			Max.			
	73			88			
Wind	Still	Moderate		High		Gust	
		X					
Humidity	Dry	Moderate		High		Rainfall	
				X			

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Jason Bublitz	Staff Scientist	SWMU 118	1	0	1
TOTAL HGL PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**1**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE		**0**	**0**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**0**	**TOTAL HOURS WORKED**		**0**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

3. Field Activities

DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Collect Surface Water Samples	**C = Continuing**	Collect time series surface water samples.

Daily Quality Control Report

4. Testing and Sampling Activities

4.1 Sampling Conducted

Location	Time	Analysis	Results - Detected / Not Detected
S118-SW0005-00.0-20220623	1020	LCQSM537DOD FL-24 analytes + GenX	Pending
S118-SW0006-00.0-20220623	1033		
S118-FD-20220623-01	1033		
S118-SW0007-00.0-20220623	1044		
S118-EB-20220623-01	1055		
S118-FB-20220623-01	1100		

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, COVID-19, Slips, Trips and Falls, Inclement Weather, Sun Exposure, Traffic, Struck by, Heat Stress, Team Work, PPE

6. Description of Work Completed

1010 - Jason B. on-site. Conduct TGSM.

1020-1044 - Collect S118-SW0005-00.0-20220623, S118-SW0006-00.0-20220623, S118-FD-20220623-01 and S118-SW0007-00.0-20220623.

1055-1100 - Collect S118-EB-20220623-01 and S118-FB-20220623-01.

1130 - All personnel off-site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Jason Bublitz	**7/22/2022**
Signature:	**7/22/2022**

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Howard Fowler	**7/22/2022**
Signature:	**7/22/2022**

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
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www.sgs.com

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SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAA	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
	S118-SW0005-000.0-20220623	6/23/22	1020	JB	GW	2		X								X	
	S118-SW0006-000.0-20220623	6/23/22	1033	JB	GW	2		X								X	
	S118-FD-20220623-01	6/23/22	1033	JB	GW	2		X								X	
	S118-SW0007-000.0-20220623	6/23/22	1044	JB	GW	2		X								X	
	S118-EB-20220623-01	6/23/22	1055	JB	WW	2		X								X	
	S118-FB-20220623-01	6/23/22	1100	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-23-22/1430	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

6/23/22 1430

Lab Use Only : Cooler Temperature (s) Celsius (corrected):_____

http://www.sgs.com/en/terms-and-conditions

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: _____

Date/Time: 6-23-2022 / 1015 Client: KSC

Location: NASA/KSC - SWMU 118 Job No.: NS1010.01.13

Meeting/training conducted by: Jason Bublitz

Work Activities: Surface Water Sampling

Safety / Training Topics Presented

Chemical Hazards: PFAS/PFOA

Physical Hazards: Slips trips falls, inclement weather, pinch points, biologicals, traffic, sun exposure, heat stress, struck by, teamwork, PPE

Specific Safety Topic(s): Traffic

Specific Training Covered: Be mindful of moving traffic. Use cones and wear high visibility clothing when working near roadway.

Attendees

Name Printed and Employee Number:	Signature:
Jason Bublitz	

NASA / KSC SWMU 118 6/23/22

Purpose: Collect time series surface water samples
Personnel: Jason B. (HBC).
Equipment: Dipper, PFAS free water, luminox, sample bottleware.
Weather: Hi- 95 Lo - 73 clear
1010: Jason B. on-site. Conduct TBSM and decontaminate sampling equipment.
1020: Collect SI18 - SW0005 - 00.0 - 20220623
1033: Collect SI18 - SW0006 00.0 - 20220623 and SI18 - FD - 20220623-01
1044: Collect SI18 - SW0007 - 00.0 - 20220623.
1055: Collect SI18 - EB - 20220623-01 (equipment blank).
1100: Collect SI18 - FB - 20220623-01 (field blank)
1130: Pack up equipment and depart site.

APPENDIX D

Photographic Logs

SWMU 014 Photographic Logs



Photo 1: S014-LB01



Photo 2: S014-LB02



Photo 3: S014-DPT1000



Photo 4: S014-DPT1001



Photo 5: S014-DPT1002



Photo 6: S014-DPT1003



Photo 7: S014-DPT1004



Photo 8: S014-DPT1005



Photo 9: S014-DPT1006



Photo 10: S014-DPT1007



Photo 11: S014-DPT1008



Photo 12: S014-DPT1009



Photo 13: S014-DPT1010



Photo 14: S014-DPT1011

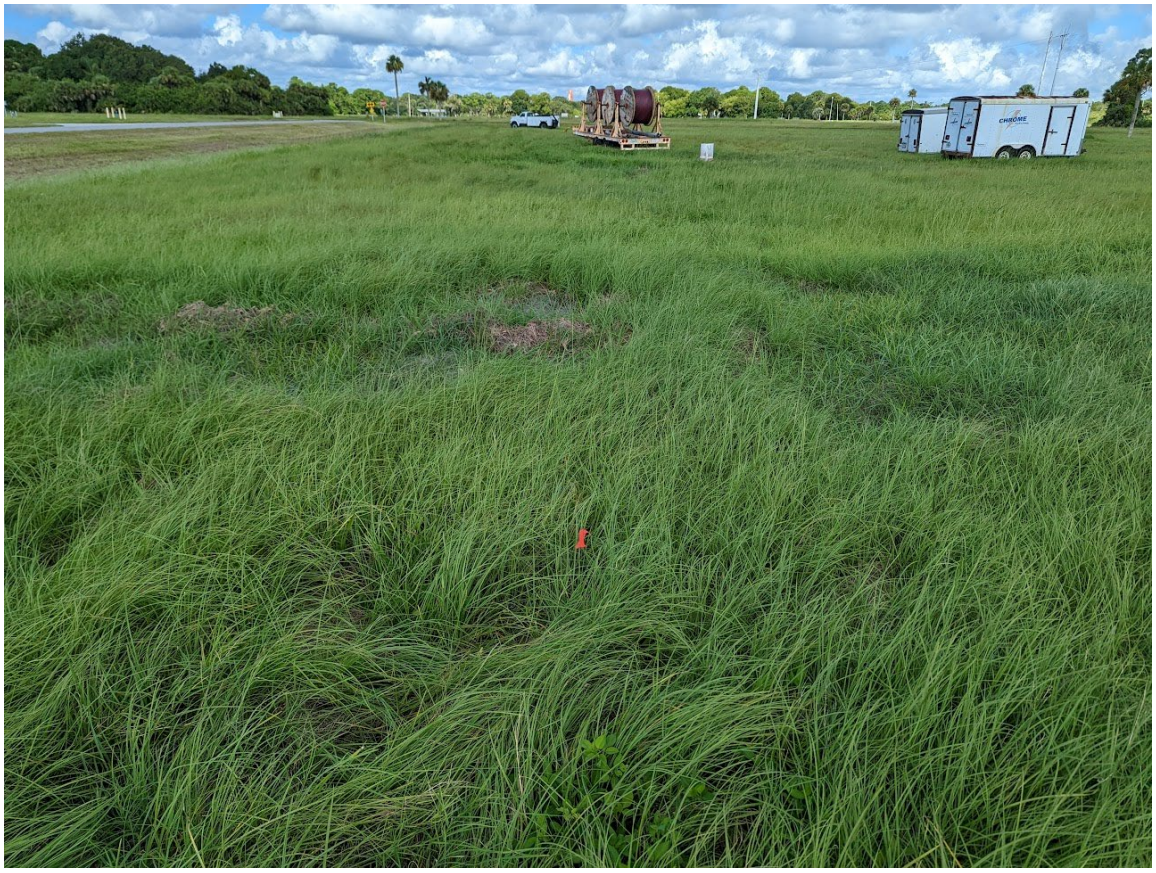


Photo 15: S014-DPT1012



Photo 16: S014-DPT1013



Photo 17: S014-DPT1014



Photo 18: S014-DPT1015



Photo 19: S014-DPT1016



Photo 20: S014-DPT1017



Photo 21: S014-DPT1018



Photo 22: S014-DPT1019



Photo 23: S014-DPT1020



Photo 24: S014-SW0001



Photo 25: S014-SW0002



Photo 26: S014-SW0003



Photo 27: S014-SW0004



Photo 28: S014-SW0005



Photo 29: S014-SW0006



Photo 30: S014-SW0007



Photo 31: S014-SW0008



Photo 32: S014-SW0009



Photo 33: S014-SW0010



Photo 34: S014-SW0011.



Photo 35: Collecting Soil Samples for Lithologic Description.



Photo 36: S014-LB01 5’ Soil Cores. 5’-10’ bls on left, deeper samples to right.



Photo 37: S014-LB01 5’ Soil Cores. 20’-25’ bls on left, deeper samples to right.



Photo 38: S014-LB01 5’ Soil Cores. 35’-40’ bls on left, 55’-60’ on right.



Photo 39: S014-LB02 5’ Soil Cores. 5’-10’ bls on right, 15’-20 on left.



Photo 40: S014-LB02 5’ Soil Cores. 20’-25’ bls on right, 35’-40’ on left.



Photo 41: S014-LB02 5’ Soil Cores. 40’-45’ bls on right, 55’-60’ on left.



Photo 42: Grouting S014-LB02.



Photo 43. Drill rig and crew at S014-DPT1002.



Photo 44. Drill rig and crew at S014-DPT1017 boring location.

SWMU 118 Photographic Logs



Photo 1: S118-LB01



Photo 2: S118-DPT1000



Photo 3: S118-DPT1001



Photo 4: S118-DPT1002



Photo 5: S118-DPT1003 2-24-22



Photo 6: S118-DPT1004



Photo 7: S118-DPT1005



Photo 8: S118-DPT1006



Photo 9: S118-DPT1007



Photo 10: S118-DPT1008



Photo 11: S118-DPT1009



Photo 12: S118-DPT1010



Photo 13: S118-SW0001



Photo 14: S118-SW0002



Photo 15: S118-SW0003



Photo 16: S118-SW0004



Photo 17: S118-SW0005



Photo 18: S118-SW0006



Photo 19: S118-SW0007



Photo 20: S118-SW0008



Photo 21: S118-LB01 5’ Soil Cores. 5’-10’ bls on right, deeper samples to left.



Photo 22: S118-LB01 5’ Soil Cores. 45’-50’ bls on left, deeper samples to right.



Photo 23: S118-LB01 5’ Soil Cores. 55’-60’ bls on left, shallower samples to right.



Photo 24: Grouting S118-LB01.



Photo 25: DPT Groundwater Sampling.



Photo 26: Surface Water Sampling

APPENDIX E

Historical Analytical Results Tables

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0050		PFAS-DPT0050		PFAS-DPT0050		PFAS-DPT0050		PFAS-DPT0051		PFAS-DPT0051		PFAS-DPT0051		PFAS-DPT0051		PFAS-DPT0115	
Sample ID:			PFAS-DPT0050-010.0-20181101		PFAS-DPT0050-025.0-20181101		PFAS-DPT0050-035.0-20181101		PFAS-DPT0050-045.0-20181101		PFAS-DPT0051-010.0-20181101		PFAS-DPT0051-025.0-20181101		PFAS-DPT0051-035.0-20181101		PFAS-DPT0051-045.0-20181101		PFAS-DPT0115-010.0-20190329	
Depth Interval:			8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		8 - 12 ft bgs	
Sample Date:			11/1/2018		11/1/2018		11/1/2018		11/1/2018		11/1/2018		11/1/2018		11/1/2018		11/1/2018		3/29/2019	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	11		8.9		190	J	59	J	1.2	J	0.5	J	6.2	J	11	J	1000	
PFHpA	N/A	ng/L	4.5		3.8		50		16		1.1	J	1.4	U	2.8		2.2		940	
PFOA	6	ng/L	**7.4**		5.2		**60**	**J**	**20**	**J**	1.2	J	1.4	J	**8.3**	**J**	**12**	**J**	**1200**	
PFNA	6	ng/L	1.3	J	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U	1.4	U	1.6	U	**240**	
PFDA	N/A	ng/L	0.58	J	0.94	U	0.93	U	0.95	U	0.99	U	0.93	U	0.95	U	1	U	5.1	
PFUnA	N/A	ng/L	1.5	U	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U	1.4	U	1.6	U	1.4	U
PFDoA	N/A	ng/L	1.5	U	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U	1.4	U	1.6	U	1.4	U
PFTriA	N/A	ng/L	2.9	U	2.8	U	2.8	U	2.8	U	3	U	2.8	U	2.9	U	3.1	U	2.8	U
PFTeA	N/A	ng/L	2.9	U	2.8	U	2.8	U	2.8	U	3	U	2.8	U	2.9	U	3.1	U	2.8	U
PFBS	600	ng/L	8.4		6		160		56		0.99	U	0.93	U	1.5	J	3.1		55	
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	**45**		37		**990**	**J**	**270**	**J**	2.1	J	1.6	J	16	J	24	J	**3000**	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**63**		**10**		**22**		**8.5**		**11**		3.7	U	**40**		**37**		**13000**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:

(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

RSL = Regional Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0115		PFAS-DPT0115		PFAS-DPT0115		PFAS-DPT0116		PFAS-DPT0116		PFAS-DPT0116		PFAS-DPT0116		PFAS-DPT0116		PFAS-DPT0177	
Sample ID:			PFAS-DPT0115-025.0-20190329		PFAS-DPT0115-035.0-20190329		PFAS-DPT0115-045.0-20190329		PFAS-DPT0116-010.0-20190320		PFAS-DPT0116-025.0-20190320		PFAS-DPT0116-025.0-20190320-D		PFAS-DPT0116-035.0-20190320		PFAS-DPT0116-045.0-20190320		PFAS-DPT0177-008.0-20210121	
Depth Interval:			23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		8 - 12 ft bgs		23 - 27 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		6 - 10 ft bgs	
Sample Date:			3/29/2019		3/29/2019		3/29/2019		3/20/2019		3/20/2019		3/20/2019		3/20/2019		3/20/2019		1/21/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	6500		2100		610		7.2		610		590		1400		100		11	U
PFHpA	N/A	ng/L	2400		730		190		1.8	J	180		200		400		22		11	U
PFOA	6	ng/L	**2100**		**850**		**190**		4.2		**240**		**210**		**490**		**22**		**11**	**U**
PFNA	6	ng/L	**93**		**29**		1.5	J	0.59	J	**16**	**J**	**140**	U	**10**	**J**	0.83	J	**11**	**U**
PFDA	N/A	ng/L	46	U	0.61	J	0.92	U	0.94	U	19	U	1.5	J	18	U	0.91	U	11	U
PFUnA	N/A	ng/L	70	U	1.4	U	1.4	U	1.4	U	28	U	1.4	U	27	U	1.4	U	11	U
PFDoA	N/A	ng/L	70	U	1.4	U	1.4	U	1.4	U	28	U	1.4	U	27	U	1.4	U	11	U
PFTriA	N/A	ng/L	140	U	2.8	U	2.8	U	2.8	U	56	U	2.8	U	55	U	2.7	U	11	U
PFTeA	N/A	ng/L	140	U	2.8	U	2.8	U	2.8	U	56	U	2.8	U	55	U	2.7	U	11	U
PFBS	600	ng/L	**3500**		**1200**		80		10		240		220		**770**		83		11	U
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	**14000**		**6500**		**500**		**110**		**3000**		**2800**		**4700**		**280**		11	U
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**16000**		**9100**		**200**		**760**		**20000**		**18000**		**15000**		**980**		**22.6**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0177		PFAS-DPT0177		PFAS-DPT0177		PFAS-DPT0178		PFAS-DPT0178		PFAS-DPT0178		PFAS-DPT0178		PFAS-DPT0178		PFAS-DPT0179	
Sample ID:			PFAS-DPT0177-023.0-20210121		PFAS-DPT0177-033.0-20210121		PFAS-DPT0177-043.0-20210121		PFAS-DPT0178-008.0-20210121		PFAS-DPT0178-023.0-20210121		PFAS-DPT0178-033.0-20210121		PFAS-DPT0178-033.0-20210121-DUP		PFAS-DPT0178-043.0-20210121		PFAS-DPT0179-008.0-20210122	
Depth Interval:			21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs	
Sample Date:			1/21/2021		1/21/2021		1/21/2021		1/21/2021		1/21/2021		1/21/2021		1/21/2021		1/21/2021		1/22/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	3.6	I	7.8		4	U	48.8		132		129		131		15.6		16	
PFHpA	N/A	ng/L	2.9	I	2.8	I	4	U	26.3		82.1		65.4		65.9		10.4		4.8	
PFOA	6	ng/L	4.5		**6.3**		4	U	**20.2**		**36**		**24**		**25.7**		**7.7**		**8.6**	
PFNA	6	ng/L	4	U	4	U	4	U	4.5	U	5	U	4.5	U	4.2	U	4	U	4.2	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5	U	4.5	U	4.2	U	4	U	4.2	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5	U	4.5	U	4.2	U	4	U	4.2	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4.5	U	25	U	4.5	U	4.2	U	4	U	4.2	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4.5	U	25	U	4.5	U	4.2	U	4	U	4.2	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5	U	4.5	U	4.2	U	4	U	4.2	U
PFBS	600	ng/L	2.1	I	3.8	I	4	U	16.2		50.3		44.4		44.5		8.9		12.4	
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	4	U	35.4		2	I	**186**		**487**		**374**		**383**		14.2		**135**	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**20.9**		**76.5**		4	U	**313**		**352**		**37.2**		**37.9**		**7.1**		**105**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
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UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0179		PFAS-DPT0179		PFAS-DPT0179		PFAS-DPT0180		PFAS-DPT0180		PFAS-DPT0180		PFAS-DPT0180		PFAS-DPT0182		PFAS-DPT0182	
Sample ID:			PFAS-DPT0179-023.0-20210122		PFAS-DPT0179-033.0-20210122		PFAS-DPT0179-043.0-20210122		PFAS-DPT0180-008.0-20210122		PFAS-DPT0180-023.0-20210122		PFAS-DPT0180-033.0-20210122		PFAS-DPT0180-043.0-20210122		PFAS-DPT0182-008.0-20210125		PFAS-DPT0182-023.0-20210125	
Depth Interval:			21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs	
Sample Date:			1/22/2021		1/22/2021		1/22/2021		1/22/2021		1/22/2021		1/22/2021		1/22/2021		1/25/2021		1/25/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	3.3	IV	4.5	U	4.2	U	4	U	26		12.7		93.2		242		3.8	U
PFHpA	N/A	ng/L	4.2	U	4.5	U	4.2	U	4	U	6		2.6	I	14.5		105		3.8	U
PFOA	6	ng/L	2.5	I	4.5	U	4.2	U	3	I	**10.7**		4.1	I	**44.4**		**80.1**		3.8	U
PFNA	6	ng/L	4.2	U	4.5	U	4.2	U	4	U	4.2	U	4.5	U	4.5	U	**20**	**U**	3.8	U
PFDA	N/A	ng/L	4.2	U	4.5	U	4.2	U	4	U	4.2	U	4.5	U	4.5	U	20	U	3.8	U
PFUnA	N/A	ng/L	4.2	U	4.5	U	4.2	U	4	U	4.2	U	4.5	U	23	U	20	U	3.8	U
PFDoA	N/A	ng/L	4.2	U	4.5	U	21	U	4	U	4.2	U	23	U	23	U	20	U	3.8	U
PFTriA	N/A	ng/L	4.2	U	4.5	U	21	U	4	U	4.2	U	23	U	23	U	20	U	3.8	U
PFTeA	N/A	ng/L	4.2	U	4.5	U	4.2	U	4	U	4.2	U	4.5	U	4.5	U	20	U	3.8	U
PFBS	600	ng/L	3.2	I	4.5	U	4.2	U	4	U	22.6		10.4		78.3		111		3.8	U
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	4.3		4.5	U	4.2	U	4	U	**80**		24.9		**296**		**1110**		3.8	U
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**6.6**		**4.5**	**U**	**4.2**	**U**	4	U	**22.5**		**4.5**	**U**	**98.6**		**2810**		**6.4**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0182		PFAS-DPT0182		PFAS-DPT0184		PFAS-DPT0184		PFAS-DPT0184		PFAS-DPT0184		PFAS-DPT0234		PFAS-DPT0234		PFAS-DPT0234	
Sample ID:			PFAS-DPT0182-033.0-20210125		PFAS-DPT0182-043.0-20210125		PFAS-DPT0184-008.0-20210126		PFAS-DPT0184-023.0-20210126		PFAS-DPT0184-033.0-20210126		PFAS-DPT0184-043.0-20210126		PFAS-DPT0234-008.0-20210916		PFAS-DPT0234-023.0-20210916		PFAS-DPT0234-033.0-20210916	
Depth Interval:			31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs	
Sample Date:			1/25/2021		1/25/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		9/16/2021		9/16/2021		9/16/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	17.2		4.6		11	U	4.2	U	4.5	U	4.5	U	4	U	5.2		2	I
PFHpA	N/A	ng/L	2.9	I	4.2	U	11	U	4.2	U	4.5	U	4.5	U	4	U	2.7	I	4	U
PFOA	6	ng/L	2.3	I	4.2	U	5.9	I	4.2	U	4.5	U	4.5	U	2.5	I	4.3		5.5	
PFNA	6	ng/L	3.8	U	4.2	U	**11**	**U**	4.2	U	4.5	U	4.5	U	4	U	4	U	4	U
PFDA	N/A	ng/L	3.8	U	4.2	U	11	U	4.2	U	4.5	U	4.5	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	3.8	U	4.2	U	11	U	4.2	U	45	U	4.5	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	3.8	U	4.2	U	11	U	4.2	U	45	U	4.5	U	4	U	4	U	4	U
PFTriA	N/A	ng/L	19	U	21	U	11	U	4.2	U	45	U	4.5	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	19	U	21	U	11	U	21	U	4.5	U	4.5	U	4	U	4	U	4	U
PFBS	600	ng/L	13.8		3	I	11	U	4.2	U	4.5	U	4.5	U	4	U	4	U	4	U
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	33.2		7.2		10.9	I	4.2	U	3	I	2.4	I	4	U	4.6		3.8	I
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	3	I	**5.8**		**7.9**	**I**	**4.2**	**U**	3.9	I	**4.5**	**U**	**6.8**		4	U	4	U
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L													8	U	8	U	8	U
NMeFOSAA	N/A	ng/L													8	U	8	U	8	U
NEtFOSAA	N/A	ng/L													8	U	8	U	8	U
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-1
SWMU 014
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0234		PFAS-DPT0236		PFAS-DPT0236		PFAS-DPT0236		PFAS-DPT0236		PFAS-DPT0263		PFAS-DPT0263		PFAS-DPT0263		PFAS-DPT0263	
Sample ID:			PFAS-DPT0234-043.0-20210916		PFAS-DPT0236-008.0-20210916		PFAS-DPT0236-023.0-20210916		PFAS-DPT0236-033.0-20210916		PFAS-DPT0236-043.0-20210916		PFAS-DPT0263-008.0-20211123		PFAS-DPT0263-008.0-20211123-D		PFAS-DPT0263-023.0-20211123		PFAS-DPT0263-033.0-20211123	
Depth Interval:			41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs	
Sample Date:			9/16/2021		9/16/2021		9/16/2021		9/16/2021		9/16/2021		11/23/2021		11/23/2021		11/23/2021		11/23/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	4	U	13.2		87.4		221		1530		15.7		16.3		4		4	U
PFHpA	N/A	ng/L	4	U	6.3		26.4		51		333		12		12.3		4	U	4	U
PFOA	6	ng/L	4	U	3.8	I	**30.8**		**81.3**		**567**		**27.6**		**27.2**		3.7	I	4	U
PFNA	6	ng/L	4	U	4	U	4	U	4	U	4.3		4.4	I	4.6	I	4	U	4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	5.5	U	4.8	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	5.5	U	4.8	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	5.5	U	4.8	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4	U	4	U	5.5	U	4.8	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	40	U	4	U	5.5	U	4.8	U	4	U	4	U
PFBS	600	ng/L	4	U	12.3		188		374		**1970**		3.3	I	4.1	I	4	U	4	U
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	4	U	**82.7**		**747**		**1250**		**9300**		**49**		**55.4**		4.1		4	U
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	4	U	**34.4**		**640**		**206**		**4760**		**138**		**135**		4	U	4	U
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L	8	U																
NMeFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	11	U	9.5	U	8	U	8	U
NEtFOSAA	N/A	ng/L	8	U	8	U	8	U	8	U	8	U	11	U	9.5	U	8	U	8	U
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

DPT Sample Location:			PFAS-DPT0263	
Sample ID:			PFAS-DPT0263-043.0-20211123	
Depth Interval:			41 - 45 ft bgs	
Sample Date:			11/23/2021	
Sample Type:			Normal	
Acronym	**RSL [1]**	**Units**	**Results**	
PFBA	N/A	ng/L		
PFPeA	N/A	ng/L		
PFHxA	N/A	ng/L	12.6	
PFHpA	N/A	ng/L	7.1	
PFOA	6	ng/L	**10.1**	
PFNA	6	ng/L	5.6	U
PFDA	N/A	ng/L	5.6	U
PFUnA	N/A	ng/L	5.6	U
PFDoA	N/A	ng/L	5.6	U
PFTriA	N/A	ng/L	5.6	U
PFTeA	N/A	ng/L	5.6	U
PFBS	600	ng/L	5.6	U
PFPeS	N/A	ng/L		
PFHxS	40	ng/L	5.6	U
PFHpS	N/A	ng/L		
PFOS	4	ng/L	**13.1**	
PFNS	N/A	ng/L		
PFDS	N/A	ng/L		
PFOSA	N/A	ng/L		
NMeFOSAA	N/A	ng/L	11	U
NEtFOSAA	N/A	ng/L	11	U
4:2 FTS	N/A	ng/L		
6:2 FTS	N/A	ng/L		
8:2 FTS	N/A	ng/L		
GenX	6	ng/L		

Notes:

(1): EPA, 2022. Regional Screening Level Reside

J = The analyte was positively identified, and the

N/A = not established

RSL = Regional Screening Level

U = The analyte was not detected and is reported

UJ = The analyte was not detected and was report

RSL < Detection Limit

RSL < PFAS <= 10x RSL

10x RSL < PFAS <= 100x RSL

100x RSL < PFAS <= 1000x RSL

1000x RSL < PFAS

Table E-2
SWMU 118
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0073		PFAS-DPT0073		PFAS-DPT0073		PFAS-DPT0073		PFAS-DPT0074		PFAS-DPT0074		PFAS-DPT0074		PFAS-DPT0074		PFAS-DPT0074	
Sample ID:			PFAS-DPT0073-010.0-20181221		PFAS-DPT0073-025.0-20181221		PFAS-DPT0073-035.0-20181221		PFAS-DPT0073-045.0-20181221		PFAS-DPT0074-010.0-20181221		PFAS-DPT0074-010.0-20181221-D		PFAS-DPT0074-025.0-20181221		PFAS-DPT0074-035.0-20181221		PFAS-DPT0074-045.0-20181221	
Depth Interval:			8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		8 - 12 ft bgs		8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date:			12/21/2018		12/21/2018		12/21/2018		12/21/2018		12/21/2018		12/21/2018		12/21/2018		12/21/2018		12/21/2018	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Duplicate		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	30		23		33		29		13		13		7.3		7.6		76	
PFHpA	N/A	ng/L	5.4		3.7		4.5		4.3		7.1		7.5		1.9		1.1	J	12	
PFOA	6	ng/L	**9.2**		**6.9**		**9**		**8.5**		3.6		3.4		4.5		4.1		**37**	
PFNA	6	ng/L	0.5	J	0.52	J	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
PFDA	N/A	ng/L	0.91	U	0.91	U	0.95	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U
PFUnA	N/A	ng/L	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
PFDoA	N/A	ng/L	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
PFTriA	N/A	ng/L	2.7	U	2.7	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.7	U	2.7	U
PFTeA	N/A	ng/L	2.7	U	2.7	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.7	U	2.7	U
PFBS	600	ng/L	11		11		14		18		3.2		3.2		3.7		4.4		29	
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	**130**		**120**		**150**		**120**		8.7		8.9		18		28		**220**	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**340**		**330**		**230**		**36**		2.8	U	2.8	U	**21**		**130**		**540**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:

(1): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

RSL = Regional Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-2
SWMU 118
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0075		PFAS-DPT0075		PFAS-DPT0075		PFAS-DPT0075		PFAS-DPT0075		PFAS-DPT0125		PFAS-DPT0125		PFAS-DPT0125		PFAS-DPT0125	
Sample ID:			PFAS-DPT0075-010.0-20190325		PFAS-DPT0075-010.0-20190325-D		PFAS-DPT0075-025.0-20190325		PFAS-DPT0075-035.0-20190325		PFAS-DPT0075-045.0-20190325		PFAS-DPT0125-010.0-20190320		PFAS-DPT0125-025.0-20190320		PFAS-DPT0125-035.0-20190321		PFAS-DPT0125-045.0-20190321	
Depth Interval:			8 - 12 ft bgs		8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs		8 - 12 ft bgs		23 - 27 ft bgs		33 - 37 ft bgs		43 - 47 ft bgs	
Sample Date:			3/25/2019		3/25/2019		3/25/2019		3/25/2019		3/25/2019		3/20/2019		3/20/2019		3/21/2019		3/21/2019	
Sample Type:			Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	2.8		2.6		1.8	U	2		0.91	U	11		1.9	U	6.3		5.3	
PFHpA	N/A	ng/L	3		2.8		1.3	J	1.4	J	1.4	U	9.3		0.79	J	2.4		1.8	
PFOA	6	ng/L	2.9		2.8		3.1		1.9		0.87	J	**15**		1.8	J	**6.7**		3.4	
PFNA	6	ng/L	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	0.83	J	1.5	U	1.4	U
PFDA	N/A	ng/L	0.92	U	0.92	U	0.91	U	0.96	U	0.91	U	0.92	U	0.93	U	0.77	J	0.91	U
PFUnA	N/A	ng/L	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U
PFDoA	N/A	ng/L	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U
PFTriA	N/A	ng/L	2.8	U	2.7	U	2.7	U	2.9	U	2.7	U	2.7	U	2.8	U	3	U	2.7	U
PFTeA	N/A	ng/L	2.8	U	2.7	U	2.7	U	2.9	U	2.7	U	2.7	U	2.8	U	3	U	2.7	U
PFBS	600	ng/L	0.49	J	0.92	U	0.71	J	0.96	U	0.91	U	4.6		1.5	J	8		1.5	J
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	1.7	J	1.8		3.8		3		0.73	J	5.8		0.74	J	7.6		11	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	2.8	U	2.7	U	1.9	J	1.1	J	2.7	U	**7.2**		**4.1**		**17**		3.6	U
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported a
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-2
SWMU 118
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0173		PFAS-DPT0173		PFAS-DPT0173		PFAS-DPT0173		PFAS-DPT0173		PFAS-DPT0174		PFAS-DPT0174		PFAS-DPT0174		PFAS-DPT0174	
Sample ID:			PFAS-DPT0173-008.0-20210120		PFAS-DPT0173-023.0-20210120		PFAS-DPT0173-023.0-20210120-DUP		PFAS-DPT0173-033.0-20210120		PFAS-DPT0173-043.0-20210120		PFAS-DPT0174-008.0-20210120		PFAS-DPT0174-023.0-20210120		PFAS-DPT0174-033.0-20210120		PFAS-DPT0174-043.0-20210120	
Depth Interval:			6 - 10 ft bgs		21 - 25 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs	
Sample Date:			1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021	
Sample Type:			Normal		Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	11.3		4	U	4	U	4.5	U	31.6		4.6		18.5		72.8		25.7	
PFHpA	N/A	ng/L	9.5		4	U	4	U	4.5	U	9.1		2.2	I	13.3		44.1		13.7	
PFOA	6	ng/L	6		4	U	4	U	4.5	U	**18.9**		4	U	**6.4**		**20.9**		**8.6**	
PFNA	6	ng/L	4	U	4	U	4	U	4.5	U	5.3	U	4	U	4	U	4.6		4	U
PFDA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5.3	U	4	U	4	U	4	U	4	U
PFUnA	N/A	ng/L	4	U	4	U	4	U	23	U	5.3	U	4	U	4	U	4	U	4	U
PFDoA	N/A	ng/L	4	U	4	U	20	U	23	U	5.3	U	4	U	20	U	4	U	4	U
PFTriA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5.3	U	4	U	4	U	4	U	4	U
PFTeA	N/A	ng/L	4	U	4	U	4	U	4.5	U	5.3	U	4	U	4	U	4	U	4	U
PFBS	600	ng/L	2.7	I	3.1	I	3.8	I	26.1		15.1		2.2	I	5		3	I	8	
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	5.9		5		5.1		4.7		**117**		**48**		6.7		12		23.7	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	4	U	**4.5**		**5.4**		**11.5**		**476**		3.3	I	**8.4**		**10.5**		**12.4**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported a
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-2
SWMU 118
Historical Groundwater Analytical Results

DPT Sample Location:			PFAS-DPT0175		PFAS-DPT0175		PFAS-DPT0175		PFAS-DPT0175		PFAS-DPT0183		PFAS-DPT0183		PFAS-DPT0183		PFAS-DPT0183		PFAS-DPT0183	
Sample ID:			PFAS-DPT0175-008.0-20210120		PFAS-DPT0175-023.0-20210120		PFAS-DPT0175-033.0-20210120		PFAS-DPT0175-043.0-20210120		PFAS-DPT0183-008.0-20210126		PFAS-DPT0183-023.0-20210126		PFAS-DPT0183-033.0-20210126		PFAS-DPT0183-043.0-20210126		PFAS-DPT0183-043.0-20210126-DUP	
Depth Interval:			6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		6 - 10 ft bgs		21 - 25 ft bgs		31 - 35 ft bgs		41 - 45 ft bgs		41 - 45 ft bgs	
Sample Date:			1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021	
Sample Type:			Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Duplicate	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	ng/L																		
PFPeA	N/A	ng/L																		
PFHxA	N/A	ng/L	316		370		427		9.4		5	U	14.2		12.2		20.9		19.7	
PFHpA	N/A	ng/L	70.7		61		96.8		2.2	I	5	U	3.3	I	2.8	I	3.1	I	3.3	I
PFOA	6	ng/L	**134**		**134**		**136**		3.4	I	5	U	5.4		5.4		**6.2**		5.7	
PFNA	6	ng/L	4	U	4	U	4.2	U	4	U	5	U	4.2	U	4.2	U	4.5	U	4.5	U
PFDA	N/A	ng/L	4	U	20	U	20	U	4	U	5	U	4.2	U	4.2	U	23	U	4.5	U
PFUnA	N/A	ng/L	4	U	40	U	40	U	4	U	5	U	4.2	U	4.2	U	23	U	23	U
PFDoA	N/A	ng/L	4	U	40	U	40	U	20	U	5	U	4.2	U	4.2	U	23	U	23	U
PFTriA	N/A	ng/L	4	U	4	U	20	U	4	U	5	U	4.2	U	4.2	U	23	U	23	U
PFTeA	N/A	ng/L	4	U	4	U	20	U	4	U	5	U	4.2	U	4.2	U	4.5	U	4.5	U
PFBS	600	ng/L	211		310		286		8.8		3.1	I	9.5		5.5		19.8		20.6	
PFPeS	N/A	ng/L																		
PFHxS	40	ng/L	**2490**		**2770**		**2210**		**59.3**		5	U	**111**		**79.4**		**87**		**92.3**	
PFHpS	N/A	ng/L																		
PFOS	4	ng/L	**10400**		**4230**		**5680**		**65.6**		**8.5**		**89.4**		**308**		**87.9**		**78.4**	
PFNS	N/A	ng/L																		
PFDS	N/A	ng/L																		
PFOSA	N/A	ng/L																		
NMeFOSAA	N/A	ng/L																		
NEtFOSAA	N/A	ng/L																		
4:2 FTS	N/A	ng/L																		
6:2 FTS	N/A	ng/L																		
8:2 FTS	N/A	ng/L																		
GenX	6	ng/L																		

Notes:
(1): EPA, 2022. Regional Screening Level Reside
J = The analyte was positively identified, and the
N/A = not established
RSL = Regional Screening Level
U = The analyte was not detected and is reported a
UJ = The analyte was not detected and was report

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-3
SWMU 014
Historical Surface Water Analytical Results

		Sample Location:	PFAS-SW0048		PFAS-SW0049		PFAS-SW0049		PFAS-SW0167	
		Sample Date:	9/28/2020		9/28/2020		9/28/2020		8/4/2021	
		Sample Type:	Normal		Normal		Duplicate		Normal	
Acronym	SW SL [(1)]	Units	Results		Results		Results		Results	
PFBA	N/A	ng/L								
PFPeA	N/A	ng/L								
PFHxA	N/A	ng/L	39.3		6.3		6.1		4	U
PFHpA	N/A	ng/L	22		3.6	I	3.8		4	U
PFOA	500	ng/L	17.1		3.3	I	3	I	4	U
PFNA	N/A	ng/L	3.9		3.8	U	3.8	U	4	U
PFDA	N/A	ng/L	3.8	U	3.8	U	3.8	U	4	U
PFUnA	N/A	ng/L	3.8	U	3.8	U	3.8	U	4	U
PFDoA	N/A	ng/L	3.8	U	3.8	U	3.8	U	4	U
PFTriA	N/A	ng/L	3.8	U	3.8	U	3.8	U	4	U
PFTeA	N/A	ng/L	3.8	U	3.8	U	3.8	U	4	U
PFBS	N/A	ng/L	14.1		2.9	I	2.9	I	4	U
PFPeS	N/A	ng/L								
PFHxS	N/A	ng/L	157		31.5		28.7		2.2	I
PFHpS	N/A	ng/L								
PFOS	10	ng/L	**346**		**41.8**		**39.9**		6.8	
PFNS	N/A	ng/L								
PFDS	N/A	ng/L								
PFOSA	N/A	ng/L								
NMeFOSAA	N/A	ng/L								
NEtFOSAA	N/A	ng/L								
4:2 FTS	N/A	ng/L								
6:2 FTS	N/A	ng/L								
8:2 FTS	N/A	ng/L								
GenX	N/A	ng/L								

Notes:

(1): FDEP, 2020. Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment.

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

SW SL = Surface Water Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Table E-4
SWMU 118
Historical Surface Water Analytical Results

Sample Location:			PFAS-SW0025		PFAS-SW0026		PFAS-SW0026		PFAS-SW0059		PFAS-SW0138	
Sample ID:			PFAS-SW0025-20190313		PFAS-SW0026-20190313		PFAS-SW0026-20190313-D		PFAS-SW0059-001.0-20201001		PFAS-SW0138-001.0-20210805	
Sample Date:			3/13/2019		3/13/2019		3/13/2019		10/1/2020		8/5/2021	
Sample Type:			Normal		Normal		Duplicate		Normal		Normal	
Acronym	SW SL [1]	Units	Results		Results		Results		Results		Results	
PFBA	N/A	ng/L										
PFPeA	N/A	ng/L										
PFHxA	N/A	ng/L	130		44		45		6.3		4	U
PFHpA	N/A	ng/L	96		32		32		4.2	U	2.3	I
PFOA	500	ng/L	46		15		14		2.7	I	4	U
PFNA	N/A	ng/L	15		4.9		4.9		4.2	U	4	U
PFDA	N/A	ng/L	2.5		0.92	J	1.2	J	4.2	U	4	U
PFUnA	N/A	ng/L	1.3	U	1.2	U	1.6	U	4.2	U	4	U
PFDoA	N/A	ng/L	1.3	U	1.2	U	1.6	U	4.2	U	4	U
PFTriA	N/A	ng/L	2.5	U	2.5	U	3.1	U	4.2	U	4	U
PFTeA	N/A	ng/L	2.5	U	2.5	U	3.1	U	4.2	U	4	U
PFBS	N/A	ng/L	3.6		1.6		1.5	J	10.2		2.2	I
PFPeS	N/A	ng/L										
PFHxS	N/A	ng/L	27		7.9		8		30.8		5.4	
PFHpS	N/A	ng/L										
PFOS	10	ng/L	**18**		5.5		6.3		**107**		5.6	
PFNS	N/A	ng/L										
PFDS	N/A	ng/L										
PFOSA	N/A	ng/L										
NMeFOSAA	N/A	ng/L										
NEtFOSAA	N/A	ng/L										
4:2 FTS	N/A	ng/L										
6:2 FTS	N/A	ng/L										
8:2 FTS	N/A	ng/L										
GenX	N/A	ng/L										

Notes:

(1): FDEP, 2020. Surface Water Screening Levels for PFOA and PFOS Based on the Protection of Human Health Using Probabilistic Risk Assessment.

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

SW SL = Surface Water Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

SW SL < Detection Limit
SW SL < PFAS <= 10x SW SL
10x SW SL < PFAS <= 100x SW SL
100x SW SL < PFAS <= 1000x SW SL
1000x SW SL < PFAS

Sample Location:			PFAS-SB0051		PFAS-SB0051	
Sample ID:			PFAS-SB0051-000.5-20210122		PFAS-SB0051-002.0-20210122	
Depth Interval:			0 - 0.5 ft bgs		0.5 - 2 ft bgs	
Sample Date:			1/22/2021		1/22/2021	
Sample Type:			Normal		Normal	
Acronym	RSL [1]	Units	Results		Results	
PFBA	N/A	mg/kg				
PFPeA	N/A	mg/kg				
PFHxA	N/A	mg/kg	0.00026	I	0.00046	U
PFHpA	N/A	mg/kg	0.00044	U	0.00046	U
PFOA	0.19	mg/kg	0.00044	U	0.00046	U
PFNA	0.19	mg/kg	0.00044	U	0.00047	
PFDA	N/A	mg/kg	0.00044	U	0.00046	U
PFUnA	N/A	mg/kg	0.00044	U	0.00046	U
PFDoA	N/A	mg/kg	0.00044	U	0.00046	U
PFTriA	N/A	mg/kg	0.00044	U	0.00046	U
PFTeA	N/A	mg/kg	0.00044	U	0.00046	U
PFBS	19	mg/kg	0.00044	U	0.00046	U
PFPeS	N/A	mg/kg				
PFHxS	1.3	mg/kg	0.00072		0.00027	I
PFHpS	N/A	mg/kg				
PFOS	0.13	mg/kg	0.0023		0.0309	
PFNS	N/A	mg/kg				
PFDS	N/A	mg/kg				
PFOSA	N/A	mg/kg				
NMeFOSAA	N/A	mg/kg				
NEtFOSAA	N/A	mg/kg				
4:2 FTS	N/A	mg/kg				
6:2 FTS	N/A	mg/kg				
8:2 FTS	N/A	mg/kg				
GenX	0.23	mg/kg				

Notes:

(1): EPA, 2022. Regional Screening Level Resident Soil Table (TR=1E-06, HQ=1.0)

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

RSL = Regional Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit

RSL < PFAS <= 10x RSL

10x RSL < PFAS <= 100x RSL

100x RSL < PFAS <= 1000x RSL

1000x RSL < PFAS

Table E-6
SWMU 118
Historical Soil Analytical Results

Sample Location:			PFAS-SB0048		PFAS-SB0048		PFAS-SB0048		PFAS-SB0049		PFAS-SB0049		PFAS-SB0050		PFAS-SB0050		PFAS-SB0070		PFAS-SB0070	
Sample ID:			PFAS-SB0048-000.5-20210120		PFAS-SB0048-000.5-20210120-DUP		PFAS-SB0048-002.0-20210120		PFAS-SB0049-000.5-20210120		PFAS-SB0049-002.0-20210120		PFAS-SB0050-000.5-20210120		PFAS-SB0050-002.0-20210120		PFAS-SB0070-000.5-20210127		PFAS-SB0070-002.0-20210127	
Depth Interval:			0 - 0.5 ft bgs		0 - 0.5 ft bgs		0.5 - 2 ft bgs		0 - 0.5 ft bgs		0.5 - 2 ft bgs		0 - 0.5 ft bgs		0.5 - 2 ft bgs		0 - 0.5 ft bgs		0.5 - 2 ft bgs	
Sample Date:			1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/20/2021		1/27/2021		1/27/2021	
Sample Type:			Normal		Duplicate		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Acronym	RSL [1]	Units	Results		Results		Results		Results		Results		Results		Results		Results		Results	
PFBA	N/A	mg/kg																		
PFPeA	N/A	mg/kg																		
PFHxA	N/A	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00031	I	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFHpA	N/A	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00067		0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFOA	0.19	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00051		0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.00035	I
PFNA	0.19	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00045		0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFDA	N/A	mg/kg	0.0005	U	0.00032	I	0.00051	U	0.00031	I	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFUnA	N/A	mg/kg	0.00037	I	0.00061	U	0.00051	U	0.00042	U	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFDoA	N/A	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00042	U	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFTriA	N/A	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00042	U	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFTeA	N/A	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00042	U	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFBS	19	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00042	U	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFPeS	N/A	mg/kg																		
PFHxS	1.3	mg/kg	0.0005	U	0.00061	U	0.00051	U	0.00021	I	0.00047	U	0.00047	U	0.00051	U	0.00058	U	0.0005	U
PFHpS	N/A	mg/kg																		
PFOS	0.13	mg/kg	0.00078		0.001		0.00051	U	0.0044		0.00047	U	0.00063		0.00051	U	0.00036	I	0.0005	U
PFNS	N/A	mg/kg																		
PFDS	N/A	mg/kg																		
PFOSA	N/A	mg/kg																		
NMeFOSAA	N/A	mg/kg																		
NEtFOSAA	N/A	mg/kg																		
4:2 FTS	N/A	mg/kg																		
6:2 FTS	N/A	mg/kg																		
8:2 FTS	N/A	mg/kg																		
GenX	0.23	mg/kg																		

Notes:

(1): EPA, 2022. Regional Screening Level Resident Soil Table (TR=1E-06, HQ=1.0)

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

N/A = not established

RSL = Regional Screening Level

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

RSL < Detection Limit
RSL < PFAS <= 10x RSL
10x RSL < PFAS <= 100x RSL
100x RSL < PFAS <= 1000x RSL
1000x RSL < PFAS

Table E-7
SWMU 014
Historical Sediment Analytical Results

Sample Location:		PFAS-SD0016		PFAS-SD0017	
Sample ID:		PFAS-SD0016-001.0-20200928		PFAS-SD0017-001.0-20200928	
Depth Interval:		0 - 1 ft bgs		0 - 1 ft bgs	
Sample Date:		9/28/2020		9/28/2020	
Sample Type:		Normal		Normal	
Acronym	Units	Results		Results	
PFBA	mg/kg				
PFPeA	mg/kg				
PFHxA	mg/kg	0.00055	U	0.00054	U
PFHpA	mg/kg	0.00055	U	0.00054	U
PFOA	mg/kg	0.00055	U	0.00054	U
PFNA	mg/kg	0.00055	U	0.00054	U
PFDA	mg/kg	0.00055	U	0.00054	U
PFUnA	mg/kg	0.00055	U	0.00054	U
PFDoA	mg/kg	0.00055	U	0.00054	U
PFTriA	mg/kg	0.00055	U	0.00054	U
PFTeA	mg/kg	0.00055	U	0.00054	U
PFBS	mg/kg	0.00055	U	0.00054	U
PFPeS	mg/kg				
PFHxS	mg/kg	0.00055	U	0.00054	U
PFHpS	mg/kg				
PFOS	mg/kg	0.0027		0.0014	
PFNS	mg/kg				
PFDS	mg/kg				
PFOSA	mg/kg				
NMeFOSAA	mg/kg				
NEtFOSAA	mg/kg				
4:2 FTS	mg/kg				
6:2 FTS	mg/kg				
8:2 FTS	mg/kg				
GenX	mg/kg				

Notes:
J = The analyte was positively identified, and the associated numerical value is the approximate concentration.
U = The analyte was not detected and is reported at the laboratory limit of detection.
UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

Sample Location:		PFAS-SD0028		PFAS-SD0029		PFAS-SD0030	
Sample ID:		PFAS-SD0028-001.0-20200921		PFAS-SD0029-001.0-20200921		PFAS-SD0030-001.0-20201001	
Depth Interval:		0 - 1 ft bgs		0 - 1 ft bgs		0 - 1 ft bgs	
Sample Date:		9/21/2020		9/21/2020		10/1/2020	
Sample Type:		Normal		Normal		Normal	
Acronym	Units	Results		Results		Results	
PFBA	mg/kg						
PFPeA	mg/kg						
PFHxA	mg/kg	0.0019	I	0.00056	U	0.00064	U
PFHpA	mg/kg	0.0039		0.00056	U	0.00064	U
PFOA	mg/kg	0.0031		0.00056	U	0.00064	U
PFNA	mg/kg	0.0049		0.00056	U	0.00064	U
PFDA	mg/kg	0.0067		0.00056	U	0.00064	U
PFUnA	mg/kg	0.0128		0.00056	U	0.00064	U
PFDoA	mg/kg	0.013		0.00056	U	0.00064	U
PFTriA	mg/kg	0.0081		0.00056	U	0.00064	U
PFTeA	mg/kg	0.004		0.00056	U	0.00064	U
PFBS	mg/kg	0.0026	U	0.00056	U	0.00064	U
PFPeS	mg/kg						
PFHxS	mg/kg	0.0048		0.00056	U	0.00064	U
PFHpS	mg/kg						
PFOS	mg/kg	0.0156		0.00056	U	0.0014	
PFNS	mg/kg						
PFDS	mg/kg						
PFOSA	mg/kg						
NMeFOSAA	mg/kg						
NEtFOSAA	mg/kg						
4:2 FTS	mg/kg						
6:2 FTS	mg/kg						
8:2 FTS	mg/kg						
GenX	mg/kg						

Notes:

J = The analyte was positively identified, and the associated numerical value is the approximate concentration.

U = The analyte was not detected and is reported at the laboratory limit of detection.

UJ = The analyte was not detected and was reported with a quality control issue at the laboratory limit of detection.

APPENDIX F

Laboratory Analytical Reports

SWMU 014 Laboratory Analytical Reports

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report



Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

SWMU 014

SGS Job Number: FA93379

Sampling Date: 02/22/22

Report to:

Hydrogeologic, Inc.

drivers@hgl.com

ATTN: Denise Rivers

Total number of pages in report: 43

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

Hydrogeologic, Inc.

Job No: FA93379

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 014

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93379-1	02/22/22	15:30	PD	02/23/22	AQ	Surface Water	S014-SW0001-000.0-20220222
FA93379-2	02/22/22	15:35	PD	02/23/22	AQ	Surface Water	S014-SW0002-000.0-20220222
FA93379-3	02/22/22	15:50	PD	02/23/22	AQ	Surface Water	S014-SW0003-000.0-20220222
FA93379-4	02/22/22	15:50	PD	02/23/22	AQ	Surface Water	S014-FD-20220222-01
FA93379-5	02/22/22	16:00	PD	02/23/22	AQ	Surface Water	S014-SW0004-000.0-20220222
FA93379-6	02/22/22	16:15	PD	02/23/22	AQ	Surface Water	S014-SW0005-000.0-20220222
FA93379-7	02/22/22	16:20	PD	02/23/22	AQ	Field Blank Water	S014-FB-20220222-01
FA93379-8	02/22/22	16:25	PD	02/23/22	AQ	Equipment Blank	S014-EB-20220222-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93379

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 3/16/2022 1:19:59 PM

On 02/23/2022, 7 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93379 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP89961

Sample(s) FA93380-2MS, FA93380-3DUP, FA93380-2MS were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluorodecanoic acid, Perfluorononanoic acid are outside control limits for sample OP89961-DUP. Probable cause is due to sample non-homogeneity.

FA93379-1: Dilution required due to matrix interference (ID recovery standard failure).

FA93379-3: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA93379-4: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA93379-5: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA93379
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93379-1	**S014-SW0001-000.0-20220222**					
Perfluorobutanoic acid		0.0137 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0228	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0202	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0115	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0117	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0087	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0094	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0944	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.239	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93379-2	**S014-SW0002-000.0-20220222**					
Perfluorobutanoic acid		0.0201	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0436	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0389	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0178	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0223	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0027 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0112	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0128	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0954	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0059 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.304	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93379-3	**S014-SW0003-000.0-20220222**					
Perfluorobutanoic acid [a]		0.0547	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.148	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.143	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0688	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0537	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid [a]		0.0061 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0742	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0954	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.990	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.0409	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		1.71	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
PFOSA [a]		0.0073 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93379
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93379-4	**S014-FD-20220222-01**					
Perfluorobutanoic acid [a]		0.0496	0.033	0.017	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.133	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.127	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0622	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0500	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid [a]		0.0054 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0682	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0885	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.900	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.0366	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		1.37	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
PFOSA [a]		0.0067 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93379-5	**S014-SW0004-000.0-20220222**					
Perfluorobutanoic acid [a]		0.0315	0.031	0.015	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0412	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0358	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0278	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0237	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0120 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0158	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.191	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.0069 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.107	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
PFOSA [a]		0.0043 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
FA93379-6	**S014-SW0005-000.0-20220222**					
Perfluorobutanoic acid		0.0265	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0317	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0261	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0140	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0114	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0074 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0101	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0994	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.198	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0021 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0044 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93379
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA93379-7 **S014-FB-20220222-01**

No hits reported in this sample.

FA93379-8 **S014-EB-20220222-01**

No hits reported in this sample.

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-SW0001-000.0-20220222
Lab Sample ID: FA93379-1 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26395.D	1	03/12/22 13:44	MV	02/25/22 07:15	OP89961	S4Q366
Run #2 [a]	3Q56382.D	5	03/15/22 08:14	NG	02/25/22 07:15	OP89961	S3Q775

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0137	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0228	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0202	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0115	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0117	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0087	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0094	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0944	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.239	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0001-000.0-20220222
Lab Sample ID: FA93379-1 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%	70%	50-150%
	13C5-PFPeA	66%	74%	50-150%
	13C5-PFHxA	70%	81%	50-150%
	13C4-PFHpA	76%	86%	50-150%
	13C8-PFOA	86%	93%	50-150%
	13C9-PFNA	87%	97%	50-150%
	13C6-PFDA	96%	94%	50-150%
	13C7-PFUnDA	92%	92%	50-150%
	13C2-PFDoDA	83%	78%	50-150%
	13C2-PFTeDA	72%	74%	50-150%
	13C3-PFBS	67%	79%	50-150%
	13C3-PFHxS	75%	88%	50-150%
	13C8-PFOS	82%	94%	50-150%
	13C8-FOSA	49% [c]	55%	50-150%
	d3-MeFOSAA	108%	115%	50-150%
	d5-EtFOSAA	100%	105%	50-150%
	13C2-4:2FTS	71%	90%	50-150%
	13C2-6:2FTS	92%	101%	50-150%
	13C2-8:2FTS	93%	83%	50-150%
	13C3-HFPO-DA	62%	94%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0002-000.0-20220222
Lab Sample ID: FA93379-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26396.D	1	03/12/22 14:00	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0201	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0436	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0389	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0178	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0223	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0027	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0112	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0128	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0954	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0059	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.304	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0002-000.0-20220222
Lab Sample ID: FA93379-2 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	70%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	52%		50-150%
	d3-MeFOSAA	100%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	64%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0003-000.0-20220222
Lab Sample ID: FA93379-3 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q26397.D	1.4	03/12/22 14:15	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	70.0 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0547	0.040	0.020	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.148	0.020	0.010	0.0050	ug/l	
307-24-4	Perfluorohexanoic acid	0.143	0.020	0.010	0.0050	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0688	0.020	0.010	0.0050	ug/l	
335-67-1	Perfluorooctanoic acid	0.0537	0.020	0.010	0.0050	ug/l	
375-95-1	Perfluorononanoic acid	0.0061	0.020	0.010	0.0050	ug/l	J
335-76-2	Perfluorodecanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
307-55-1	Perfluorododecanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0742	0.020	0.010	0.0050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0954	0.020	0.010	0.0050	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.990	0.020	0.010	0.0050	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0409	0.020	0.010	0.0050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.71	0.020	0.010	0.0050	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.010 U	0.020	0.010	0.0050	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U	0.020	0.010	0.0050	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0073	0.020	0.010	0.0050	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.020 U	0.040	0.020	0.010	ug/l	
2991-50-6	EtFOSAA	0.020 U	0.040	0.020	0.010	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U	0.040	0.020	0.010	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.020 U	0.040	0.020	0.010	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0003-000.0-20220222
Lab Sample ID: FA93379-3 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.020 U	0.040	0.020	0.010	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.020 U	0.040	0.020	0.010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	91%		50-150%
	13C9-PFNA	92%		50-150%
	13C6-PFDA	104%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDoDA	86%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	52%		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	106%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	75%		50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220222-01
Lab Sample ID: FA93379-4
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q26398.D	1.5	03/12/22 14:31	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	90.0 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0496	0.033	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.133	0.017	0.0083	0.0042	ug/l	
307-24-4	Perfluorohexanoic acid	0.127	0.017	0.0083	0.0042	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0622	0.017	0.0083	0.0042	ug/l	
335-67-1	Perfluorooctanoic acid	0.0500	0.017	0.0083	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	0.0054	0.017	0.0083	0.0042	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0682	0.017	0.0083	0.0042	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0885	0.017	0.0083	0.0042	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.900	0.017	0.0083	0.0042	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0366	0.017	0.0083	0.0042	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.37	0.017	0.0083	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0067	0.017	0.0083	0.0042	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.017 U	0.033	0.017	0.0083	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.033	0.017	0.0083	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.033	0.017	0.0083	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.033	0.017	0.0083	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220222-01
Lab Sample ID: FA93379-4 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.033	0.017	0.0083	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.017 U	0.033	0.017	0.0083	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	87%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	107%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	57%		50-150%
	d3-MeFOSAA	109%		50-150%
	d5-EtFOSAA	106%		50-150%
	13C2-4:2FTS	87%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	100%		50-150%
	13C3-HFPO-DA	78%		50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0004-000.0-20220222		
Lab Sample ID:	FA93379-5	**Date Sampled:**	02/22/22
Matrix:	AQ - Surface Water	**Date Received:**	02/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q26399.D	1.15	03/12/22 14:46	MV	02/25/22 07:15	OP89961	S4Q366
Run #2 [b]	3Q56383.D	5.77	03/15/22 08:32	NG	02/25/22 07:15	OP89961	S3Q775

	Initial Volume	Final Volume
Run #1	75.0 ml	1.0 ml
Run #2	75.0 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0315	0.031	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0412	0.015	0.0077	0.0038	ug/l	
307-24-4	Perfluorohexanoic acid	0.0358	0.015	0.0077	0.0038	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0278	0.015	0.0077	0.0038	ug/l	
335-67-1	Perfluorooctanoic acid	0.0237	0.015	0.0077	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.038 U [c]	0.077	0.038	0.019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0120	0.015	0.0077	0.0038	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0158	0.015	0.0077	0.0038	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.191	0.015	0.0077	0.0038	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0069	0.015	0.0077	0.0038	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.107	0.015	0.0077	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043	0.015	0.0077	0.0038	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.015 U	0.031	0.015	0.0077	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.031	0.015	0.0077	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0004-000.0-20220222
Lab Sample ID: FA93379-5 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.015 U	0.031	0.015	0.0077	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%	87%	50-150%
	13C5-PFPeA	85%	90%	50-150%
	13C5-PFHxA	86%	92%	50-150%
	13C4-PFHpA	83%	92%	50-150%
	13C8-PFOA	87%	93%	50-150%
	13C9-PFNA	90%	92%	50-150%
	13C6-PFDA	92%	92%	50-150%
	13C7-PFUnDA	80%	95%	50-150%
	13C2-PFDoDA	62%	91%	50-150%
	13C2-PFTeDA	44% d	76%	50-150%
	13C3-PFBS	83%	95%	50-150%
	13C3-PFHxS	84%	93%	50-150%
	13C8-PFOS	84%	91%	50-150%
	13C8-FOSA	52%	64%	50-150%
	d3-MeFOSAA	93%	115%	50-150%
	d5-EtFOSAA	87%	106%	50-150%
	13C2-4:2FTS	87%	102%	50-150%
	13C2-6:2FTS	89%	102%	50-150%
	13C2-8:2FTS	89%	84%	50-150%
	13C3-HFPO-DA	78%	108%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0005-000.0-20220222
Lab Sample ID: FA93379-6
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26400.D	1	03/12/22 15:02	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0265	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0317	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0261	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0140	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0114	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0074	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0101	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0994	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.198	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021	0.0080	0.0040	0.0020	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0044	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0005-000.0-20220222
Lab Sample ID: FA93379-6
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%		50-150%
	13C5-PFPeA	56%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	81%		50-150%
	13C2-PFDoDA	71%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	61%		50-150%
	13C3-PFHxS	73%		50-150%
	13C8-PFOS	77%		50-150%
	13C8-FOSA	54%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	63%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	52%		50-150%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220222-01
Lab Sample ID: FA93379-7
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26401.D	1	03/12/22 15:17	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220222-01
Lab Sample ID: FA93379-7 **Date Sampled:** 02/22/22
Matrix: AQ - Field Blank Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		50-150%
	13C5-PFPeA	96%		50-150%
	13C5-PFHxA	96%		50-150%
	13C4-PFHpA	96%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	101%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	95%		50-150%
	13C2-PFTeDA	90%		50-150%
	13C3-PFBS	96%		50-150%
	13C3-PFHxS	95%		50-150%
	13C8-PFOS	92%		50-150%
	13C8-FOSA	100%		50-150%
	d3-MeFOSAA	111%		50-150%
	d5-EtFOSAA	105%		50-150%
	13C2-4:2FTS	90%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	89%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220222-01
Lab Sample ID: FA93379-8
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26402.D	1	03/12/22 15:33	MV	02/25/22 07:15	OP89961	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220222-01
Lab Sample ID: FA93379-8 **Date Sampled:** 02/22/22
Matrix: AQ - Equipment Blank **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%		50-150%
	13C5-PFPeA	89%		50-150%
	13C5-PFHxA	90%		50-150%
	13C4-PFHpA	91%		50-150%
	13C8-PFOA	92%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	90%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	83%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando
Chain of Custody

FA93379

SGS - ORLANDO JOB # : PAGE_____OF_____

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL Inc.
Address: 2405 N. Courtney Pkwy Ste 203
City: Merritt Island State: FL Zip: 32953
Project Contact: Denise Rivers Email: drivers@HGL.com
Phone #: 910-233-3460
Sampler(s) Name(s) (Printed)
Sampler 1: Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street: Kennedy Space Center
City: Merritt Island State: FL
Project #: NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

LC/MS/MS TOP DOD FL_LC_MS_Table_A

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LAB USE ONLY
1	5014-SW0001-000.0-20220222	2/22/22	1530	PD	SW	2		X							X	
2	5014-SW0002-000.0-20220222	2/22/22	1535	PD	SW	2		X							X	
3	5014-SW0003-000.0-20220222	2/22/22	1550	PD	SW	2		X							X	
4	5014-FD-20220222-01	2/22/22	1550	PD	SW	2		X							X	
5	5014-SW0004-000.0-20220222	2/22/22	1600	PD	SW	2		X							X	
6	5014-SW0005-000.0-20220222	2/22/22	1615	PD	SW	2		X							X	
7	5014-FB-20220222-01	2/22/22	1620	PD	SW	2		X							X	
8	5014-EB-20220222-01	2/22/22	1625	PD	SW	2		X							X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT SM
LABEL VERIFICATION CM

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	HGL	2-23-22 1345	2	3	2/23/22 15:36	4 2/23/22 1536
5	Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.0C, 3.8C IR (SM)

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA93379: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA93379 **Client:** HGL INC **Project:** SWMV 014 PFAS ASSESSMENT

Date / Time Received: 2/23/2022 3:36:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (4.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 2/23/2022 3:36:00 PM Reviewer: _____ Date: _____

FA93379: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93379
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89961	EPA 537M QSM5.3 B-15						
OP89961-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	103	%	73-129
OP89961-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	107	%	72-129
OP89961-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	106	%	72-129
OP89961-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	104	%	72-130
OP89961-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	106	%	71-133
OP89961-BS	375-95-1	Perfluorononanoic acid	BSP	REC	106	%	69-130
OP89961-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	104	%	71-129
OP89961-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	104	%	69-133
OP89961-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	109	%	72-134
OP89961-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	101	%	65-144
OP89961-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	110	%	71-132
OP89961-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	106	%	72-130
OP89961-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	103	%	71-127
OP89961-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP89961-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	109	%	69-134
OP89961-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	65-140
OP89961-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	106	%	69-127
OP89961-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	99	%	53-142
OP89961-BS	754-91-6	PFOSA	BSP	REC	103	%	67-137
OP89961-BS	2355-31-9	MeFOSAA	BSP	REC	105	%	65-136
OP89961-BS	2991-50-6	EtFOSAA	BSP	REC	112	%	61-135
OP89961-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	108	%	63-143
OP89961-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP89961-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	106	%	67-138
OP89961-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	105	%	73-129
OP89961-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	109	%	72-129
OP89961-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	106	%	72-129
OP89961-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	106	%	72-130
OP89961-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	107	%	71-133
OP89961-MS*	375-95-1	Perfluorononanoic acid	MS	REC	104	%	69-130
OP89961-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	100	%	71-129
OP89961-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	103	%	69-133
OP89961-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	111	%	72-134
OP89961-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	95	%	65-144
OP89961-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	110	%	71-132
OP89961-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	106	%	72-130
OP89961-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	110	%	71-127
OP89961-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	106	%	68-131
OP89961-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	109	%	69-134
OP89961-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	99	%	65-140
OP89961-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	104	%	69-127
OP89961-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	96	%	53-142

* Sample used for QC is not from job FA93379

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93379
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89961-MS*	754-91-6	PFOSA	MS	REC	106	%	67-137
OP89961-MS*	2355-31-9	MeFOSAA	MS	REC	106	%	65-136
OP89961-MS*	2991-50-6	EtFOSAA	MS	REC	111	%	61-135
OP89961-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	109	%	63-143
OP89961-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140
OP89961-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	107	%	67-138
OP89961-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	8	%	30
OP89961-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	7	%	30
OP89961-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	1	%	30
OP89961-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	7	%	30
OP89961-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	2	%	30
OP89961-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	200	%	30
OP89961-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	200	%	30
OP89961-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP89961-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP89961-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP89961-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP89961-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	4	%	30
OP89961-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	6	%	30
OP89961-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	3	%	30
OP89961-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	13	%	30
OP89961-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	4	%	30
OP89961-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP89961-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP89961-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP89961-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP89961-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP89961-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP89961-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	8	%	30
OP89961-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93379

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26304.D	1	03/11/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	102%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	103%	50-150%
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	106%	50-150%

Instrument Blank

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26304.D	1	03/11/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	103%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	100%	50-150%

Instrument Blank

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26389.D	1	03/12/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	111%	50-150%
	13C6-PFDA	114%	50-150%

Instrument Blank

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26389.D	1	03/12/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	112%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q775-IBLK	3Q56317.D	1	03/14/22	NG	n/a	n/a	S3Q775

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-5

CAS No.	Compound	Result	RL	MDL	Units	Q
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	85%	50-150%

Method Blank Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-MB	4Q26394.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	79%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	81%	50-150%
	13C4-PFHpA	80%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	84%	50-150%

Method Blank Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-MB	4Q26394.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	75%	50-150%
	13C3-PFBS	80%	50-150%
	13C3-PFHxS	80%	50-150%
	13C8-PFOS	77%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	75%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	78%	50-150%
	13C3-HFPO-DA	75%	50-150%

Blank Spike Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-BS	4Q26393.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.164	103	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.171	107	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.170	106	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.166	104	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.169	106	71-133
375-95-1	Perfluorononanoic acid	0.16	0.169	106	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.167	104	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.167	104	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.175	109	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.161	101	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.176	110	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.170	106	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.164	103	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.166	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.175	109	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.158	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.169	106	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.158	99	53-142
754-91-6	PFOSA	0.16	0.165	103	67-137
2355-31-9	MeFOSAA	0.16	0.168	105	65-136
2991-50-6	EtFOSAA	0.16	0.179	112	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.172	108	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.175	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.170	106	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.167	104	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	84%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	83%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-BS	4Q26393.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	70%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	80%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	81%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-MS	4Q26407.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366
FA93380-2	4Q26406.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	FA93380-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0265		0.16	0.194	105	73-129
2706-90-3	Perfluoropentanoic acid	0.0380		0.16	0.212	109	72-129
307-24-4	Perfluorohexanoic acid	0.0308		0.16	0.200	106	72-129
375-85-9	Perfluoroheptanoic acid	0.0146		0.16	0.184	106	72-130
335-67-1	Perfluorooctanoic acid	0.0075	J	0.16	0.179	107	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.167	104	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.160	100	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.164	103	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.177	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.152	95	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.176	110	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0270		0.16	0.196	106	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0255		0.16	0.201	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.152		0.16	0.322	106	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0059	J	0.16	0.180	109	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.133		0.16	0.291	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.166	104	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.153	96	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.170	106	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.170	106	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.177	111	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.175	109	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.181	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.171	107	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.184	115	60-140

CAS No.	ID Standard Recoveries	MS	FA93380-2	Limits
	13C4-PFBA	59%	63%	50-150%
	13C5-PFPeA	67%	71%	50-150%
	13C5-PFHxA	71%	75%	50-150%
	13C4-PFHpA	75%	80%	50-150%
	13C8-PFOA	82%	89%	50-150%
	13C9-PFNA	83%	89%	50-150%
	13C6-PFDA	90%	96%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-MS	4Q26407.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366
FA93380-2	4Q26406.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries	MS	FA93380-2	Limits
	13C7-PFUnDA	86%	91%	50-150%
	13C2-PFDoDA	81%	84%	50-150%
	13C2-PFTeDA	66%	70%	50-150%
	13C3-PFBS	68%	72%	50-150%
	13C3-PFHxS	76%	80%	50-150%
	13C8-PFOS	82%	85%	50-150%
	13C8-FOSA	30%* [a]	74%	50-150%
	d3-MeFOSAA	97%	104%	50-150%
	d5-EtFOSAA	94%	97%	50-150%
	13C2-4:2FTS	76%	76%	50-150%
	13C2-6:2FTS	91%	93%	50-150%
	13C2-8:2FTS	92%	95%	50-150%
	13C3-HFPO-DA	64%	68%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-DUP	3Q56385.D	10	03/15/22	NG	02/25/22	OP89961	S3Q775
FA93380-3	4Q26408.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366
FA93380-3	3Q56384.D	10	03/15/22	NG	02/25/22	OP89961	S3Q775

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	Compound	FA93380-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.114		0.105	J	8	30
2706-90-3	Perfluoropentanoic acid	0.462		0.430		7	30
307-24-4	Perfluorohexanoic acid	0.312		0.316		1	30
375-85-9	Perfluoroheptanoic acid	0.107		0.100		7	30
335-67-1	Perfluorooctanoic acid	0.0773		0.0792	J	2	30
375-95-1	Perfluorononanoic acid	0.0109		ND		200*	30
335-76-2	Perfluorodecanoic acid	0.0038	J	ND		200*	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.119		0.114		4	30
2706-91-4	Perfluoropentanesulfonic acid	0.141		0.133		6	30
355-46-4	Perfluorohexanesulfonic acid	0.935 [a]		0.960		3	30
375-92-8	Perfluoroheptanesulfonic acid	0.0679		0.0596	J	13	30
1763-23-1	Perfluorooctanesulfonic acid	1.74 [a]		1.67		4	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0080	U	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.573		0.620		8	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93380-3	FA93380-3	Limits
	13C4-PFBA	78%	57%	64%	50-150%
	13C5-PFPeA	81%	68%	66%	50-150%
	13C5-PFHxA	82%	72%	70%	50-150%
	13C4-PFHpA	89%	74%	71%	50-150%
	13C8-PFOA	91%	80%	74%	50-150%
	13C9-PFNA	91%	77%	77%	50-150%
	13C6-PFDA	95%	87%	74%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93379
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89961-DUP	3Q56385.D	10	03/15/22	NG	02/25/22	OP89961	S3Q775
FA93380-3	4Q26408.D	1	03/12/22	MV	02/25/22	OP89961	S4Q366
FA93380-3	3Q56384.D	10	03/15/22	NG	02/25/22	OP89961	S3Q775

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93379-1, FA93379-2, FA93379-3, FA93379-4, FA93379-5, FA93379-6, FA93379-7, FA93379-8

CAS No.	ID Standard Recoveries	DUP	FA93380-3	FA93380-3	Limits
	13C7-PFUnDA	93%	81%	69%	50-150%
	13C2-PFDoDA	80%	74%	61%	50-150%
	13C2-PFTeDA	74%	61%	55%	50-150%
	13C3-PFBS	88%	69%	70%	50-150%
	13C3-PFHxS	89%	74%	75%	50-150%
	13C8-PFOS	91%	69%	70%	50-150%
	13C8-FOSA	70%	58%	54%	50-150%
	d3-MeFOSAA	115%	92%	88%	50-150%
	d5-EtFOSAA	104%	88%	83%	50-150%
	13C2-4:2FTS	88%	72%	75%	50-150%
	13C2-6:2FTS	106%	101%	83%	50-150%
	13C2-8:2FTS	82%	83%	67%	50-150%
	13C3-HFPO-DA		65%	88%	50-150%

(a) Result is from Run #2.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

SWMU 014 NS1010.01.06

SGS Job Number: FA93474

Sampling Date: 02/25/22



Report to:

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Total number of pages in report: 64

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Sample Summary

Hydrogeologic, Inc.

Job No: FA93474

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 014 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93474-1	02/25/22	07:54	JB	02/25/22	AQ	Ground Water	S014-DPT1000-005.0-20220225
FA93474-2	02/25/22	08:08	JB	02/25/22	AQ	Ground Water	S014-DPT1000-015.0-20220225
FA93474-3	02/25/22	08:25	JB	02/25/22	AQ	Ground Water	S014-DPT1000-025.0-20220225
FA93474-4	02/25/22	08:45	JB	02/25/22	AQ	Ground Water	S014-DPT1000-035.0-20220225
FA93474-5	02/25/22	09:05	JB	02/25/22	AQ	Ground Water	S014-DPT1000-045.0-20220225
FA93474-6	02/25/22	10:08	JB	02/25/22	AQ	Ground Water	S014-DPT1001-005.0-20220225
FA93474-7	02/25/22	10:08	JB	02/25/22	AQ	Ground Water	S014-FD-20220225-01
FA93474-8	02/25/22	10:26	JB	02/25/22	AQ	Ground Water	S014-DPT1001-015.0-20220225
FA93474-9	02/25/22	10:43	JB	02/25/22	AQ	Ground Water	S014-DPT1001-025.0-20220225
FA93474-10	02/25/22	11:01	JB	02/25/22	AQ	Ground Water	S014-DPT1001-035.0-20220225
FA93474-11	02/25/22	11:31	JB	02/25/22	AQ	Ground Water	S014-DPT1001-045.0-20220225
FA93474-12	02/25/22	12:07	JB	02/25/22	AQ	Ground Water	S014-DPT1002-005.0-20220225
FA93474-13	02/25/22	12:19	JB	02/25/22	AQ	Ground Water	S014-DPT1002-015.0-20220225

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93474

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 014 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA93474-14	02/25/22	12:35	JB	02/25/22	AQ	Ground Water	S014-DPT1002-025.0-20220225
FA93474-15	02/25/22	12:55	JB	02/25/22	AQ	Ground Water	S014-DPT1002-035.0-20220225
FA93474-16	02/25/22	13:16	JB	02/25/22	AQ	Ground Water	S014-DPT1002-045.0-20220225
FA93474-17	02/25/22	13:36	JB	02/25/22	AQ	Field Blank Water	S014-FB-20220225-01
FA93474-18	02/25/22	13:40	JB	02/25/22	AQ	Equipment Blank	S014-EB-20220225-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93474

Site: NASA TQN 21- SLF PFAS Assessment **Report Date** 3/20/2022 12:12:42

On 02/25/2022, 17 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93474 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90063

Sample(s) FA93474-6MS, FA93474-7DUP were used as the QC samples indicated.

RPD(s) for Duplicate for 8:2 Fluorotelomer sulfonate, Perfluorooctanoic acid are outside control limits for sample OP90063-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FA93474-1, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-8, FA93474-9 have surrogates outside control limits.

FA93474-1 for 13C2-PFTeDA: Outside control limits.

FA93474-1 for 13C8-FOSA: Outside control limits.

FA93474-1: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-2 for 13C2-4:2FTS: Outside control limits.

FA93474-2 for 13C3-HFPO-DA: Outside control limits.

FA93474-2 for 13C3-PFBS: Outside control limits.

FA93474-2 for 13C4-PFBA: Outside control limits.

FA93474-2 for 13C5-PFHxA: Outside control limits.

FA93474-2 for 13C5-PFPeA: Outside control limits.

FA93474-2: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-3 for 13C2-4:2FTS: Outside control limits.

FA93474-3 for 13C3-HFPO-DA: Outside control limits.

FA93474-3 for 13C3-PFBS: Outside control limits.

FA93474-3 for 13C4-PFBA: Outside control limits.

FA93474-3 for 13C5-PFHxA: Outside control limits.

FA93474-3 for 13C5-PFPeA: Outside control limits.

FA93474-3: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-4 for 13C4-PFBA: Outside control limits.

FA93474-4 for 13C5-PFPeA: Outside control limits.

FA93474-4: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-5 for 13C8-FOSA: Outside control limits.

FA93474-5: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-6 for 13C2-PFTeDA: Outside control limits.

FA93474-8 for 13C3-PFBS: Outside control limits.

FA93474-8 for 13C4-PFBA: Outside control limits.

FA93474-8 for 13C5-PFPeA: Outside control limits.

FA93474-8 for 13C8-FOSA: Outside control limits.

FA93474-8 for PFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93474-8: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-9 for 13C2-PFTeDA: Outside control limits.

FA93474-9 for 13C3-PFBS: Outside control limits.

FA93474-9 for 13C4-PFBA: Outside control limits.

FA93474-9 for 13C5-PFPeA: Outside control limits.

FA93474-9: Dilution required due to matrix interference (ID recovery standard failure).

FA93474-10 for 13C2-PFTeDA: Outside control limits.

FA93474-10 for 13C3-PFBS: Outside control limits.

FA93474-10 for 13C4-PFBA: Outside control limits.
FA93474-10 for 13C5-PFPeA: Outside control limits.
FA93474-10 for 13C8-FOSA: Outside control limits.
FA93474-10: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-11 for 13C4-PFBA: Outside control limits.
FA93474-11 for 13C5-PFPeA: Outside control limits.
FA93474-11: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-12 for 13C2-PFTeDA: Outside control limits.
FA93474-12 for 13C3-PFBS: Outside control limits.
FA93474-12 for 13C4-PFBA: Outside control limits.
FA93474-12 for 13C5-PFPeA: Outside control limits.
FA93474-12 for 13C8-FOSA: Outside control limits.
FA93474-12 for PFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.
FA93474-12: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-13 for 13C3-HFPO-DA: Outside control limits.
FA93474-13 for 13C3-PFBS: Outside control limits.
FA93474-13 for 13C4-PFBA: Outside control limits.
FA93474-13 for 13C5-PFHxA: Outside control limits.
FA93474-13 for 13C5-PFPeA: Outside control limits.
FA93474-13 for 13C8-FOSA: Outside control limits.
FA93474-13 for PFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.
FA93474-13: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-14 for 13C2-PFTeDA: Outside control limits.
FA93474-14 for 13C3-PFBS: Outside control limits.
FA93474-14 for 13C4-PFBA: Outside control limits.
FA93474-14 for 13C5-PFPeA: Outside control limits.
FA93474-14: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-15 for 13C2-PFTeDA: Outside control limits.
FA93474-15 for 13C3-PFBS: Outside control limits.
FA93474-15 for 13C4-PFBA: Outside control limits.
FA93474-15 for 13C5-PFPeA: Outside control limits.
FA93474-15: Dilution required due to matrix interference (ID recovery standard failure).
FA93474-16 for 13C2-PFTeDA: Outside control limits.
FA93474-16 for 13C4-PFBA: Outside control limits.
FA93474-16 for 13C5-PFPeA: Outside control limits.
FA93474-16 for 13C8-FOSA: Outside control limits.
FA93474-16: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____
Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA93474
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/25/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93474-1	**S014-DPT1000-005.0-20220225**					
Perfluorobutanoic acid		0.0079 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0029 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-2	**S014-DPT1000-015.0-20220225**					
Perfluoroheptanoic acid		0.0022 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0045 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0026 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0080	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-3	**S014-DPT1000-025.0-20220225**					
No hits reported in this sample.						
FA93474-4	**S014-DPT1000-035.0-20220225**					
No hits reported in this sample.						
FA93474-5	**S014-DPT1000-045.0-20220225**					
No hits reported in this sample.						
FA93474-6	**S014-DPT1001-005.0-20220225**					
Perfluoropentanoic acid		0.0035 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0039 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0026 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0033 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0310	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0533	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-7	**S014-FD-20220225-01**					
Perfluoropentanoic acid		0.0038 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0039 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0027 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0032 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0322	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0532	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-8	**S014-DPT1001-015.0-20220225**					
Perfluorohexanoic acid		0.0043 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93474
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/25/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoroheptanoic acid		0.0024 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0044 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0235	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-9	**S014-DPT1001-025.0-20220225**					
No hits reported in this sample.						
FA93474-10	**S014-DPT1001-035.0-20220225**					
Perfluorohexanoic acid		0.0311	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0054 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0147	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0245 J	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0276 J	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.104	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0184	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93474-11	**S014-DPT1001-045.0-20220225**					
Perfluoropentanoic acid [a]		0.0162 J	0.038	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0712	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0124	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0321	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0545	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0710	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.263	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0559	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-12	**S014-DPT1002-005.0-20220225**					
Perfluoropentanoic acid [a]		0.0377 J	0.038	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0293	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0180	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0105	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0027 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0104 J	0.038	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0838	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0051 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.359	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0069 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93474
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/25/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93474-13	**S014-DPT1002-015.0-20220225**					
Perfluoroheptanoic acid		0.0051 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0079	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0062 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0586	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.109	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-14	**S014-DPT1002-025.0-20220225**					
Perfluorooctanesulfonic acid		0.0042 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-15	**S014-DPT1002-035.0-20220225**					
Perfluorooctanesulfonic acid		0.0037 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-16	**S014-DPT1002-045.0-20220225**					
Perfluorooctanesulfonic acid		0.0025 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93474-17	**S014-FB-20220225-01**					
No hits reported in this sample.						
FA93474-18	**S014-EB-20220225-01**					
No hits reported in this sample.						

(a) Dilution required due to matrix interference (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-DPT1000-005.0-20220225
Lab Sample ID: FA93474-1 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56404.D	1	03/15/22 14:57	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56529.D	5	03/17/22 03:45	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0079	0.015	0.0077	0.0038	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0029	0.0077	0.0038	0.0019	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1000-005.0-20220225
Lab Sample ID: FA93474-1 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	74%	50-150%
	13C5-PFPeA	52%	75%	50-150%
	13C5-PFHxA	56%	79%	50-150%
	13C4-PFHpA	60%	83%	50-150%
	13C8-PFOA	67%	88%	50-150%
	13C9-PFNA	70%	90%	50-150%
	13C6-PFDA	72%	93%	50-150%
	13C7-PFUnDA	70%	90%	50-150%
	13C2-PFDoDA	61%	76%	50-150%
	13C2-PFTeDA	46% [c]	51%	50-150%
	13C3-PFBS	56%	80%	50-150%
	13C3-PFHxS	62%	84%	50-150%
	13C8-PFOS	67%	86%	50-150%
	13C8-FOSA	41% [c]	54%	50-150%
	d3-MeFOSAA	76%	105%	50-150%
	d5-EtFOSAA	72%	91%	50-150%
	13C2-4:2FTS	61%	86%	50-150%
	13C2-6:2FTS	76%	107%	50-150%
	13C2-8:2FTS	67%	83%	50-150%
	13C3-HFPO-DA	59%	79%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1000-015.0-20220225
Lab Sample ID: FA93474-2 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56405.D	1	03/15/22 15:14	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56530.D	5	03/17/22 04:03	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0045	0.0077	0.0038	0.0019	ug/l	J
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0077	0.0038	0.0019	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0080	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.038 U [b]	0.077	0.038	0.019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1000-015.0-20220225		
Lab Sample ID:	FA93474-2	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.038 U [b]	0.077	0.038	0.019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	37% [c]	59%	50-150%
	13C5-PFPeA	36% [c]	60%	50-150%
	13C5-PFHxA	44% [c]	65%	50-150%
	13C4-PFHpA	55%	71%	50-150%
	13C8-PFOA	68%	81%	50-150%
	13C9-PFNA	75%	84%	50-150%
	13C6-PFDA	76%	86%	50-150%
	13C7-PFUnDA	74%	83%	50-150%
	13C2-PFDoDA	65%	72%	50-150%
	13C2-PFTeDA	58%	65%	50-150%
	13C3-PFBS	42% [c]	65%	50-150%
	13C3-PFHxS	58%	72%	50-150%
	13C8-PFOS	71%	85%	50-150%
	13C8-FOSA	59%	76%	50-150%
	d3-MeFOSAA	82%	97%	50-150%
	d5-EtFOSAA	76%	90%	50-150%
	13C2-4:2FTS	49% [c]	76%	50-150%
	13C2-6:2FTS	80%	94%	50-150%
	13C2-8:2FTS	72%	80%	50-150%
	13C3-HFPO-DA	47% [c]	63%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1000-025.0-20220225
Lab Sample ID: FA93474-3 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56406.D	1	03/15/22 15:32	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56531.D	5	03/17/22 04:20	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.038 U [b]	0.077	0.038	0.019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1000-025.0-20220225		
Lab Sample ID:	FA93474-3	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.038 U [b]	0.077	0.038	0.019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	33% [c]	55%	50-150%
	13C5-PFPeA	33% [c]	57%	50-150%
	13C5-PFHxA	43% [c]	64%	50-150%
	13C4-PFHpA	55%	69%	50-150%
	13C8-PFOA	64%	76%	50-150%
	13C9-PFNA	67%	79%	50-150%
	13C6-PFDA	71%	79%	50-150%
	13C7-PFUnDA	68%	79%	50-150%
	13C2-PFDoDA	59%	69%	50-150%
	13C2-PFTeDA	53%	69%	50-150%
	13C3-PFBS	39% [c]	61%	50-150%
	13C3-PFHxS	57%	71%	50-150%
	13C8-PFOS	64%	69%	50-150%
	13C8-FOSA	57%	70%	50-150%
	d3-MeFOSAA	75%	89%	50-150%
	d5-EtFOSAA	69%	80%	50-150%
	13C2-4:2FTS	48% [c]	71%	50-150%
	13C2-6:2FTS	73%	85%	50-150%
	13C2-8:2FTS	65%	74%	50-150%
	13C3-HFPO-DA	48% [c]	61%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1000-035.0-20220225
Lab Sample ID: FA93474-4 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56407.D	1	03/15/22 15:49	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56532.D	5	03/17/22 04:38	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1000-035.0-20220225		
Lab Sample ID:	FA93474-4	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	61%	50-150%
	13C5-PFPeA	47% [c]	61%	50-150%
	13C5-PFHxA	56%	66%	50-150%
	13C4-PFHpA	64%	70%	50-150%
	13C8-PFOA	73%	75%	50-150%
	13C9-PFNA	78%	77%	50-150%
	13C6-PFDA	81%	79%	50-150%
	13C7-PFUnDA	78%	78%	50-150%
	13C2-PFDoDA	68%	70%	50-150%
	13C2-PFTeDA	58%	64%	50-150%
	13C3-PFBS	52%	65%	50-150%
	13C3-PFHxS	66%	71%	50-150%
	13C8-PFOS	73%	75%	50-150%
	13C8-FOSA	57%	59%	50-150%
	d3-MeFOSAA	87%	91%	50-150%
	d5-EtFOSAA	80%	82%	50-150%
	13C2-4:2FTS	61%	75%	50-150%
	13C2-6:2FTS	85%	85%	50-150%
	13C2-8:2FTS	74%	74%	50-150%
	13C3-HFPO-DA	59%	65%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1000-045.0-20220225		
Lab Sample ID:	FA93474-5	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56408.D	1	03/15/22 16:07	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56533.D	5	03/17/22 04:55	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1000-045.0-20220225
Lab Sample ID: FA93474-5 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	77%	50-150%
	13C5-PFPeA	52%	78%	50-150%
	13C5-PFHxA	57%	82%	50-150%
	13C4-PFHpA	63%	86%	50-150%
	13C8-PFOA	69%	96%	50-150%
	13C9-PFNA	73%	95%	50-150%
	13C6-PFDA	77%	97%	50-150%
	13C7-PFUnDA	71%	97%	50-150%
	13C2-PFDoDA	61%	86%	50-150%
	13C2-PFTeDA	54%	79%	50-150%
	13C3-PFBS	55%	82%	50-150%
	13C3-PFHxS	65%	90%	50-150%
	13C8-PFOS	68%	87%	50-150%
	13C8-FOSA	48% [c]	67%	50-150%
	d3-MeFOSAA	77%	111%	50-150%
	d5-EtFOSAA	71%	103%	50-150%
	13C2-4:2FTS	61%	93%	50-150%
	13C2-6:2FTS	80%	106%	50-150%
	13C2-8:2FTS	69%	91%	50-150%
	13C3-HFPO-DA	59%	86%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1001-005.0-20220225
Lab Sample ID: FA93474-6 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56409.D	1	03/15/22 16:24	NG	03/03/22 09:30	OP90063	S3Q776
Run #2	3Q56534.D	5	03/17/22 05:13	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0035	0.0077	0.0038	0.0019	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0039	0.0077	0.0038	0.0019	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [a]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0026	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0033	0.0077	0.0038	0.0019	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0310	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0533	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1001-005.0-20220225		
Lab Sample ID:	FA93474-6	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	64%	50-150%
	13C5-PFPeA	54%	65%	50-150%
	13C5-PFHxA	58%	69%	50-150%
	13C4-PFHpA	61%	70%	50-150%
	13C8-PFOA	64%	74%	50-150%
	13C9-PFNA	63%	75%	50-150%
	13C6-PFDA	64%	75%	50-150%
	13C7-PFUnDA	61%	75%	50-150%
	13C2-PFDoDA	52%	68%	50-150%
	13C2-PFTeDA	44% b	70%	50-150%
	13C3-PFBS	55%	70%	50-150%
	13C3-PFHxS	59%	70%	50-150%
	13C8-PFOS	61%	69%	50-150%
	13C8-FOSA	61%	73%	50-150%
	d3-MeFOSAA	68%	84%	50-150%
	d5-EtFOSAA	63%	79%	50-150%
	13C2-4:2FTS	61%	78%	50-150%
	13C2-6:2FTS	70%	85%	50-150%
	13C2-8:2FTS	59%	70%	50-150%
	13C3-HFPO-DA	62%	71%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220225-01
Lab Sample ID: FA93474-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/25/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56413.D	1	03/15/22 17:35	NG	03/03/22 09:30	OP90063	S3Q776
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038	0.0077	0.0038	0.0019	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0039	0.0077	0.0038	0.0019	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0027	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0032	0.0077	0.0038	0.0019	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0322	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0532	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220225-01
Lab Sample ID: FA93474-7 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%		50-150%
	13C5-PFPeA	57%		50-150%
	13C5-PFHxA	61%		50-150%
	13C4-PFHpA	64%		50-150%
	13C8-PFOA	67%		50-150%
	13C9-PFNA	67%		50-150%
	13C6-PFDA	67%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	56%		50-150%
	13C2-PFTeDA	53%		50-150%
	13C3-PFBS	58%		50-150%
	13C3-PFHxS	63%		50-150%
	13C8-PFOS	63%		50-150%
	13C8-FOSA	62%		50-150%
	d3-MeFOSAA	71%		50-150%
	d5-EtFOSAA	69%		50-150%
	13C2-4:2FTS	64%		50-150%
	13C2-6:2FTS	73%		50-150%
	13C2-8:2FTS	61%		50-150%
	13C3-HFPO-DA	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1001-015.0-20220225
Lab Sample ID: FA93474-8 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56415.D	1	03/15/22 18:10	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56535.D	5	03/17/22 05:30	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043	0.0077	0.0038	0.0019	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0044	0.0077	0.0038	0.0019	ug/l	J
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0235	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1001-015.0-20220225		
Lab Sample ID:	FA93474-8	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	60%	50-150%
	13C5-PFPeA	42% [d]	62%	50-150%
	13C5-PFHxA	51%	67%	50-150%
	13C4-PFHpA	59%	71%	50-150%
	13C8-PFOA	68%	77%	50-150%
	13C9-PFNA	71%	80%	50-150%
	13C6-PFDA	73%	83%	50-150%
	13C7-PFUnDA	70%	81%	50-150%
	13C2-PFDoDA	60%	70%	50-150%
	13C2-PFTeDA	52%	62%	50-150%
	13C3-PFBS	47% [d]	66%	50-150%
	13C3-PFHxS	62%	75%	50-150%
	13C8-PFOS	69%	75%	50-150%
	13C8-FOSA	41% [d]	49% [d]	50-150%
	d3-MeFOSAA	75%	91%	50-150%
	d5-EtFOSAA	71%	86%	50-150%
	13C2-4:2FTS	56%	75%	50-150%
	13C2-6:2FTS	75%	87%	50-150%
	13C2-8:2FTS	69%	76%	50-150%
	13C3-HFPO-DA	50%	68%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1001-025.0-20220225
Lab Sample ID: FA93474-9 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56416.D	1	03/15/22 18:28	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56536.D	5	03/17/22 05:48	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1001-025.0-20220225		
Lab Sample ID:	FA93474-9	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	68%	50-150%
	13C5-PFPeA	43% [c]	70%	50-150%
	13C5-PFHxA	54%	74%	50-150%
	13C4-PFHpA	62%	81%	50-150%
	13C8-PFOA	71%	89%	50-150%
	13C9-PFNA	75%	90%	50-150%
	13C6-PFDA	75%	93%	50-150%
	13C7-PFUnDA	70%	90%	50-150%
	13C2-PFDoDA	58%	78%	50-150%
	13C2-PFTeDA	41% [c]	52%	50-150%
	13C3-PFBS	48% [c]	74%	50-150%
	13C3-PFHxS	64%	84%	50-150%
	13C8-PFOS	70%	90%	50-150%
	13C8-FOSA	52%	65%	50-150%
	d3-MeFOSAA	76%	104%	50-150%
	d5-EtFOSAA	70%	92%	50-150%
	13C2-4:2FTS	58%	82%	50-150%
	13C2-6:2FTS	79%	101%	50-150%
	13C2-8:2FTS	66%	86%	50-150%
	13C3-HFPO-DA	54%	75%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1001-035.0-20220225
Lab Sample ID: FA93474-10 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56417.D	1	03/15/22 18:45	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56537.D	5	03/17/22 06:05	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0311	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0054	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0147	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0245 [b]	0.040	0.020	0.010	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0276 [b]	0.040	0.020	0.010	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.104	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0184	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1001-035.0-20220225		
Lab Sample ID:	FA93474-10	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [c]	64%	50-150%
	13C5-PFPeA	44% [c]	65%	50-150%
	13C5-PFHxA	52%	69%	50-150%
	13C4-PFHpA	60%	74%	50-150%
	13C8-PFOA	68%	79%	50-150%
	13C9-PFNA	70%	82%	50-150%
	13C6-PFDA	73%	82%	50-150%
	13C7-PFUnDA	67%	82%	50-150%
	13C2-PFDoDA	55%	75%	50-150%
	13C2-PFTeDA	44% [c]	61%	50-150%
	13C3-PFBS	48% [c]	69%	50-150%
	13C3-PFHxS	62%	78%	50-150%
	13C8-PFOS	65%	79%	50-150%
	13C8-FOSA	46% [c]	57%	50-150%
	d3-MeFOSAA	72%	88%	50-150%
	d5-EtFOSAA	65%	86%	50-150%
	13C2-4:2FTS	57%	80%	50-150%
	13C2-6:2FTS	75%	88%	50-150%
	13C2-8:2FTS	65%	79%	50-150%
	13C3-HFPO-DA	53%	71%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1001-045.0-20220225
Lab Sample ID: FA93474-11 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56418.D	1	03/15/22 19:03	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56540.D	5	03/17/22 06:58	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0162 [b]	0.038	0.019	0.0096	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0712	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0124	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0321	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0545	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0710	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.263	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0559	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1001-045.0-20220225		
Lab Sample ID:	FA93474-11	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [c]	64%	50-150%
	13C5-PFPeA	47% [c]	65%	50-150%
	13C5-PFHxA	58%	70%	50-150%
	13C4-PFHpA	53%	74%	50-150%
	13C8-PFOA	80%	82%	50-150%
	13C9-PFNA	81%	80%	50-150%
	13C6-PFDA	80%	84%	50-150%
	13C7-PFUnDA	78%	84%	50-150%
	13C2-PFDoDA	68%	71%	50-150%
	13C2-PFTeDA	54%	50%	50-150%
	13C3-PFBS	53%	70%	50-150%
	13C3-PFHxS	60%	69%	50-150%
	13C8-PFOS	72%	81%	50-150%
	13C8-FOSA	68%	76%	50-150%
	d3-MeFOSAA	88%	97%	50-150%
	d5-EtFOSAA	83%	89%	50-150%
	13C2-4:2FTS	65%	77%	50-150%
	13C2-6:2FTS	92%	95%	50-150%
	13C2-8:2FTS	72%	74%	50-150%
	13C3-HFPO-DA	57%	73%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1002-005.0-20220225
Lab Sample ID: FA93474-12 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56419.D	1	03/15/22 19:21	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56541.D	5	03/17/22 07:16	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0377 [b]	0.038	0.019	0.0096	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0293	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0180	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0105	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0027	0.0077	0.0038	0.0019	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0104 [b]	0.038	0.019	0.0096	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0838	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0051	0.0077	0.0038	0.0019	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.359	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0069	0.015	0.0077	0.0038	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-005.0-20220225		
Lab Sample ID:	FA93474-12	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% d	59%	50-150%
	13C5-PFPeA	41% d	59%	50-150%
	13C5-PFHxA	50%	64%	50-150%
	13C4-PFHpA	61%	69%	50-150%
	13C8-PFOA	72%	77%	50-150%
	13C9-PFNA	76%	78%	50-150%
	13C6-PFDA	81%	82%	50-150%
	13C7-PFUnDA	76%	80%	50-150%
	13C2-PFDoDA	62%	70%	50-150%
	13C2-PFTeDA	42% d	59%	50-150%
	13C3-PFBS	48% d	64%	50-150%
	13C3-PFHxS	64%	74%	50-150%
	13C8-PFOS	73%	79%	50-150%
	13C8-FOSA	40% d	46% d	50-150%
	d3-MeFOSAA	75%	87%	50-150%
	d5-EtFOSAA	69%	78%	50-150%
	13C2-4:2FTS	56%	72%	50-150%
	13C2-6:2FTS	86%	89%	50-150%
	13C2-8:2FTS	77%	77%	50-150%
	13C3-HFPO-DA	50%	65%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1002-015.0-20220225
Lab Sample ID: FA93474-13 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56420.D	1	03/15/22 19:38	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56542.D	5	03/17/22 07:33	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0051	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0079	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0062	0.0077	0.0038	0.0019	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0586	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.109	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-015.0-20220225		
Lab Sample ID:	FA93474-13	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.038 U [b]	0.077	0.038	0.019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	63%	50-150%
	13C5-PFPeA	41% [d]	65%	50-150%
	13C5-PFHxA	48% [d]	69%	50-150%
	13C4-PFHpA	54%	74%	50-150%
	13C8-PFOA	62%	80%	50-150%
	13C9-PFNA	67%	80%	50-150%
	13C6-PFDA	67%	85%	50-150%
	13C7-PFUnDA	64%	83%	50-150%
	13C2-PFDoDA	56%	72%	50-150%
	13C2-PFTeDA	50%	65%	50-150%
	13C3-PFBS	46% [d]	69%	50-150%
	13C3-PFHxS	56%	77%	50-150%
	13C8-PFOS	64%	79%	50-150%
	13C8-FOSA	30% [d]	42% [d]	50-150%
	d3-MeFOSAA	72%	97%	50-150%
	d5-EtFOSAA	66%	85%	50-150%
	13C2-4:2FTS	53%	76%	50-150%
	13C2-6:2FTS	71%	90%	50-150%
	13C2-8:2FTS	61%	77%	50-150%
	13C3-HFPO-DA	46% [d]	68%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1002-025.0-20220225
Lab Sample ID: FA93474-14 **Date Sampled:** 02/25/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56421.D	1	03/15/22 19:56	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56543.D	5	03/17/22 07:51	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042	0.0077	0.0038	0.0019	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-025.0-20220225		
Lab Sample ID:	FA93474-14	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	64%	50-150%
	13C5-PFPeA	43% [c]	64%	50-150%
	13C5-PFHxA	53%	70%	50-150%
	13C4-PFHpA	60%	74%	50-150%
	13C8-PFOA	69%	81%	50-150%
	13C9-PFNA	72%	83%	50-150%
	13C6-PFDA	70%	81%	50-150%
	13C7-PFUnDA	67%	81%	50-150%
	13C2-PFDoDA	56%	72%	50-150%
	13C2-PFTeDA	42% [c]	62%	50-150%
	13C3-PFBS	48% [c]	70%	50-150%
	13C3-PFHxS	62%	76%	50-150%
	13C8-PFOS	67%	77%	50-150%
	13C8-FOSA	55%	65%	50-150%
	d3-MeFOSAA	73%	89%	50-150%
	d5-EtFOSAA	68%	86%	50-150%
	13C2-4:2FTS	57%	80%	50-150%
	13C2-6:2FTS	77%	90%	50-150%
	13C2-8:2FTS	65%	76%	50-150%
	13C3-HFPO-DA	51%	71%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-035.0-20220225		
Lab Sample ID:	FA93474-15	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56424.D	1	03/15/22 20:48	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56544.D	5	03/17/22 08:08	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0037	0.0077	0.0038	0.0019	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-035.0-20220225		
Lab Sample ID:	FA93474-15	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	60%	50-150%
	13C5-PFPeA	44% [c]	62%	50-150%
	13C5-PFHxA	54%	68%	50-150%
	13C4-PFHpA	64%	73%	50-150%
	13C8-PFOA	72%	80%	50-150%
	13C9-PFNA	77%	81%	50-150%
	13C6-PFDA	78%	82%	50-150%
	13C7-PFUnDA	73%	81%	50-150%
	13C2-PFDoDA	63%	70%	50-150%
	13C2-PFTeDA	42% [c]	52%	50-150%
	13C3-PFBS	49% [c]	67%	50-150%
	13C3-PFHxS	66%	73%	50-150%
	13C8-PFOS	75%	79%	50-150%
	13C8-FOSA	61%	68%	50-150%
	d3-MeFOSAA	81%	93%	50-150%
	d5-EtFOSAA	75%	83%	50-150%
	13C2-4:2FTS	59%	77%	50-150%
	13C2-6:2FTS	80%	91%	50-150%
	13C2-8:2FTS	71%	77%	50-150%
	13C3-HFPO-DA	53%	72%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1002-045.0-20220225
Lab Sample ID: FA93474-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/25/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56425.D	1	03/15/22 21:06	NG	03/03/22 09:30	OP90063	S3Q776
Run #2 [a]	3Q56545.D	5	03/17/22 08:26	NG	03/03/22 09:30	OP90063	S3Q777

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2	130 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.038 U [b]	0.077	0.038	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0025	0.0077	0.0038	0.0019	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1002-045.0-20220225		
Lab Sample ID:	FA93474-16	**Date Sampled:**	02/25/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	66%	50-150%
	13C5-PFPeA	48% [c]	67%	50-150%
	13C5-PFHxA	54%	70%	50-150%
	13C4-PFHpA	60%	75%	50-150%
	13C8-PFOA	67%	81%	50-150%
	13C9-PFNA	71%	82%	50-150%
	13C6-PFDA	73%	84%	50-150%
	13C7-PFUnDA	70%	83%	50-150%
	13C2-PFDoDA	57%	74%	50-150%
	13C2-PFTeDA	47% [c]	71%	50-150%
	13C3-PFBS	53%	72%	50-150%
	13C3-PFHxS	63%	78%	50-150%
	13C8-PFOS	67%	77%	50-150%
	13C8-FOSA	44% [c]	56%	50-150%
	d3-MeFOSAA	78%	90%	50-150%
	d5-EtFOSAA	72%	79%	50-150%
	13C2-4:2FTS	60%	78%	50-150%
	13C2-6:2FTS	79%	94%	50-150%
	13C2-8:2FTS	66%	78%	50-150%
	13C3-HFPO-DA	53%	74%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220225-01
Lab Sample ID: FA93474-17
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/25/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56426.D	1	03/15/22 21:23	NG	03/03/22 09:30	OP90063	S3Q776
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FB-20220225-01		
Lab Sample ID:	FA93474-17	**Date Sampled:**	02/25/22
Matrix:	AQ - Field Blank Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	83%		50-150%
	13C7-PFUnDA	81%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	83%		50-150%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	76%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220225-01
Lab Sample ID: FA93474-18 **Date Sampled:** 02/25/22
Matrix: AQ - Equipment Blank **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56427.D	1	03/15/22 21:41	NG	03/03/22 09:30	OP90063	S3Q776
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220225-01
Lab Sample ID: FA93474-18 **Date Sampled:** 02/25/22
Matrix: AQ - Equipment Blank **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	83%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	84%		50-150%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	86%		50-150%
	13C2-8:2FTS	76%		50-150%
	13C3-HFPO-DA	77%		50-150%

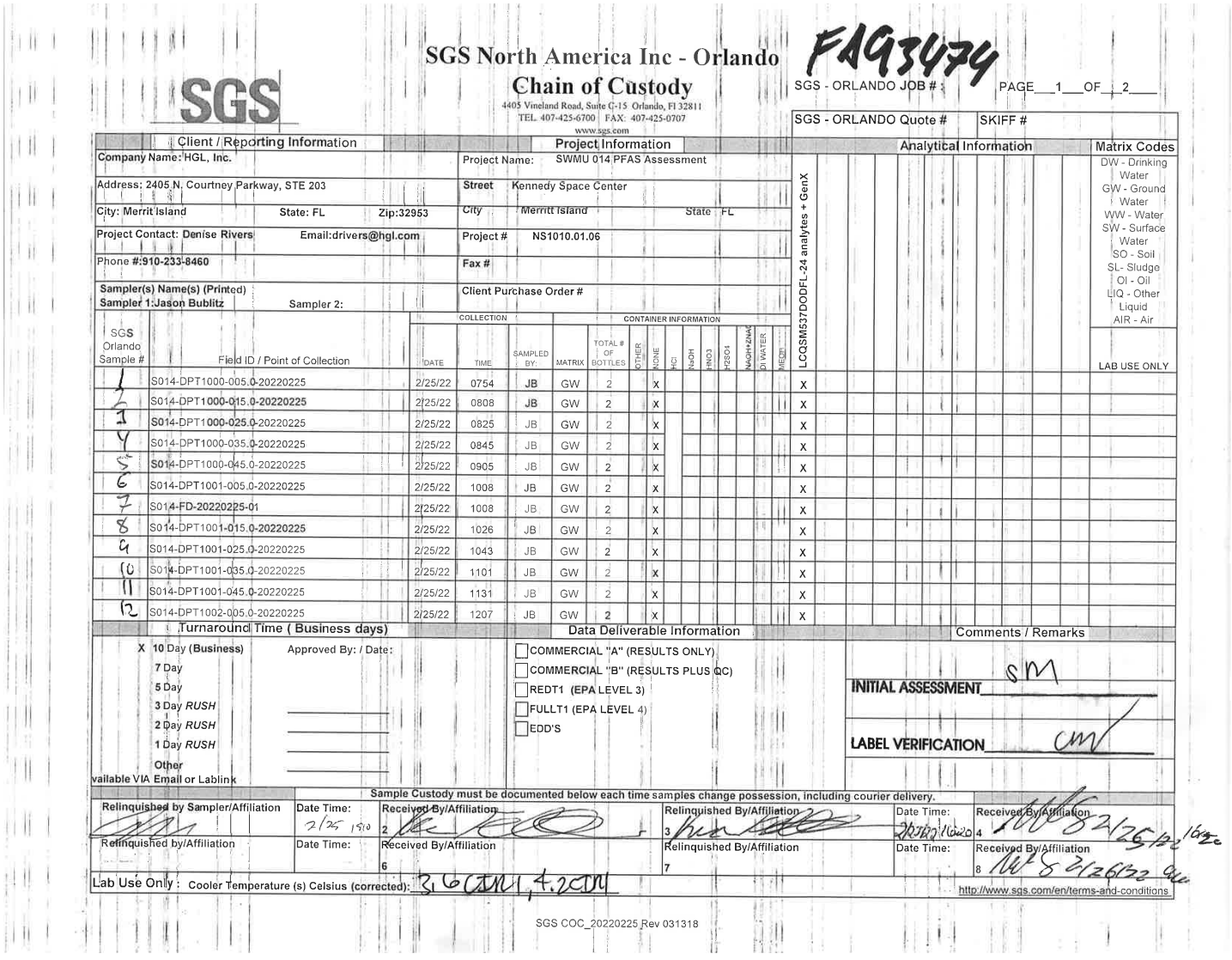
U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



SGS North America Inc - Orlando

Chain of Custody

FA93474

SGS - ORLANDO JOB # :

PAGE 1 OF 2

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 | FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	ENCORE	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S014-DPT1000-005.0-20220225	2/25/22	0754	JB	GW	2		X								X	
2	S014-DPT1000-015.0-20220225	2/25/22	0808	JB	GW	2		X								X	
3	S014-DPT1000-025.0-20220225	2/25/22	0825	JB	GW	2		X								X	
4	S014-DPT1000-035.0-20220225	2/25/22	0845	JB	GW	2		X								X	
5	S014-DPT1000-045.0-20220225	2/25/22	0905	JB	GW	2		X								X	
6	S014-DPT1001-005.0-20220225	2/25/22	1008	JB	GW	2		X								X	
7	S014-FD-20220225-01	2/25/22	1008	JB	GW	2		X								X	
8	S014-DPT1001-015.0-20220225	2/25/22	1026	JB	GW	2		X								X	
9	S014-DPT1001-025.0-20220225	2/25/22	1043	JB	GW	2		X								X	
10	S014-DPT1001-035.0-20220225	2/25/22	1101	JB	GW	2		X								X	
11	S014-DPT1001-045.0-20220225	2/25/22	1131	JB	GW	2		X								X	
12	S014-DPT1002-005.0-20220225	2/25/22	1207	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT SM

LABEL VERIFICATION CM

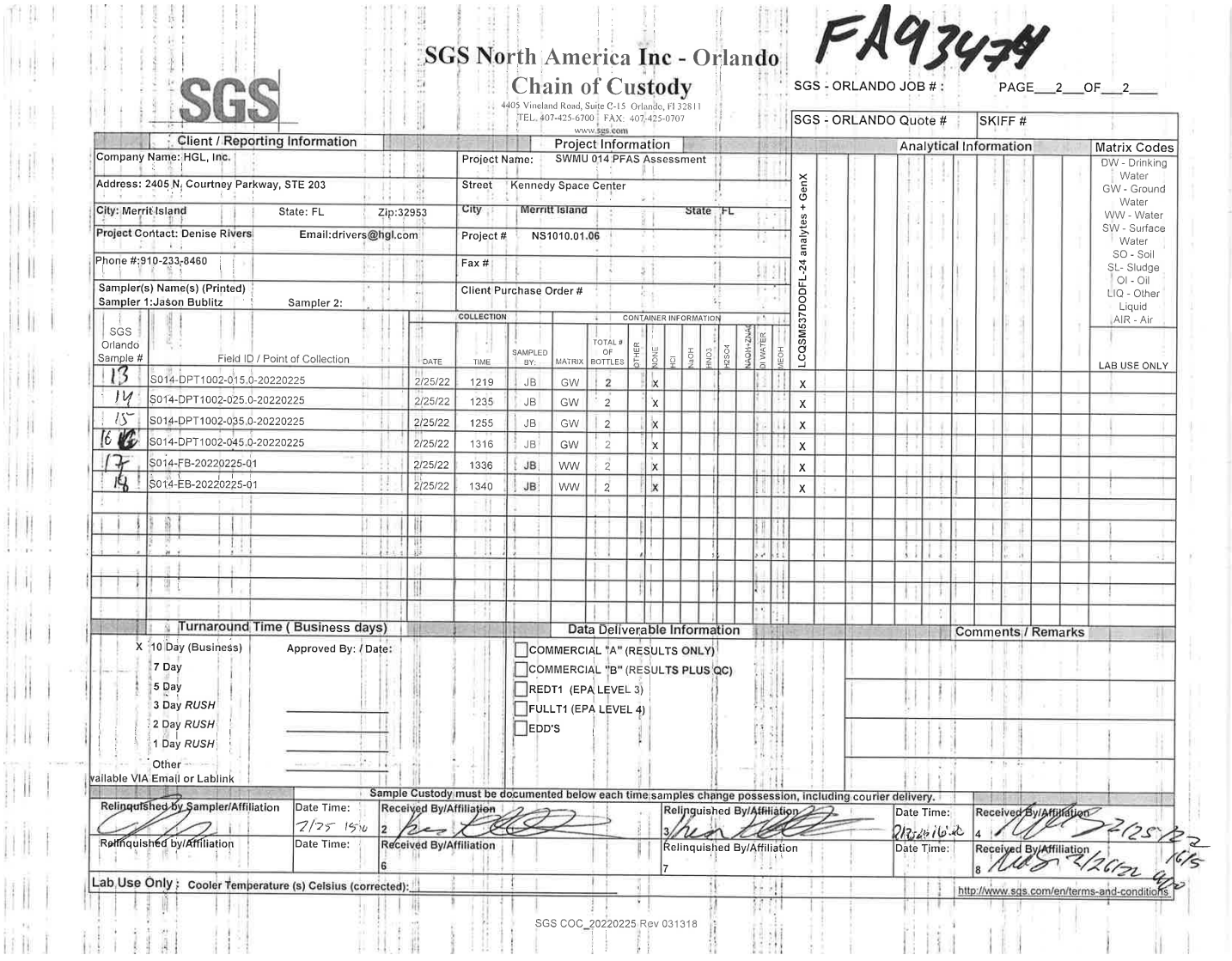
Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1910	2	3	2/25/22 1620	4 2/25/22 1620
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 2/26/22 900

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.6 CM1, 4.2 CM

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220225 Rev 031318



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

FA93474

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S014-DPT1002-015.0-20220225	2/25/22	1219	JB	GW	2		X								X	
14	S014-DPT1002-025.0-20220225	2/25/22	1235	JB	GW	2		X								X	
15	S014-DPT1002-035.0-20220225	2/25/22	1255	JB	GW	2		X								X	
16	S014-DPT1002-045.0-20220225	2/25/22	1316	JB	GW	2		X								X	
17	S014-FB-20220225-01	2/25/22	1336	JB	WW	2		X								X	
18	S014-EB-20220225-01	2/25/22	1340	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2/25 1510	2
3		2/25/22 16:22	4 2/25/22
5			6
7			8 2/26/22 1615

Lab Use Only: Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220225 Rev 031318

FA93474: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FA93474 **Client:** HGL **Project:** SWMU 014 PFAS ASSESSMENT

Date / Time Received: 2/25/2022 4:20:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6); Cooler 2: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.0); Cooler 2: (4.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 2/25/2022 4:20:00 PM Reviewer: _____ Date: _____

FA93474: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93474
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90063	EPA 537M QSM5.3 B-15						
OP90063-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	94	%	73-129
OP90063-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	97	%	72-129
OP90063-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	95	%	72-129
OP90063-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	99	%	72-130
OP90063-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	71-133
OP90063-BS	375-95-1	Perfluorononanoic acid	BSP	REC	104	%	69-130
OP90063-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	91	%	71-129
OP90063-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP90063-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP90063-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	105	%	65-144
OP90063-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	99	%	71-132
OP90063-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	99	%	73-130
OP90063-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	98	%	71-127
OP90063-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP90063-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	102	%	69-134
OP90063-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	93	%	65-140
OP90063-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	99	%	69-127
OP90063-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	88	%	53-142
OP90063-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP90063-BS	2355-31-9	MeFOSAA	BSP	REC	97	%	65-136
OP90063-BS	2991-50-6	EtFOSAA	BSP	REC	102	%	61-135
OP90063-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	97	%	63-143
OP90063-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	99	%	64-140
OP90063-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	97	%	67-138
OP90063-MS	375-22-4	Perfluorobutanoic acid	MS	REC	99	%	73-129
OP90063-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	72-129
OP90063-MS	307-24-4	Perfluorohexanoic acid	MS	REC	100	%	72-129
OP90063-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	101	%	72-130
OP90063-MS	335-67-1	Perfluorooctanoic acid	MS	REC	105	%	71-133
OP90063-MS	375-95-1	Perfluorononanoic acid	MS	REC	105	%	69-130
OP90063-MS	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	71-129
OP90063-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	99	%	69-133
OP90063-MS	307-55-1	Perfluorododecanoic acid	MS	REC	108	%	72-134
OP90063-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	109	%	65-144
OP90063-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	102	%	71-132
OP90063-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	102	%	73-130
OP90063-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	108	%	71-127
OP90063-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	103	%	68-131
OP90063-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	107	%	69-134
OP90063-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	97	%	65-140
OP90063-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	97	%	69-127
OP90063-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	86	%	53-142

* Sample used for QC is not from job FA93474

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93474
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90063-MS	754-91-6	PFOSA	MS	REC	99	%	67-137
OP90063-MS	2355-31-9	MeFOSAA	MS	REC	100	%	65-136
OP90063-MS	2991-50-6	EtFOSAA	MS	REC	105	%	61-135
OP90063-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	103	%	63-143
OP90063-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	105	%	64-140
OP90063-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	99	%	67-138
OP90063-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90063-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	3	%	30
OP90063-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	10	%	30
OP90063-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90063-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	200	%	30
OP90063-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90063-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90063-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90063-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90063-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90063-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90063-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	8	%	30
OP90063-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	9	%	30
OP90063-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	5	%	30
OP90063-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90063-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	7	%	30
OP90063-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90063-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90063-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90063-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90063-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90063-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90063-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90063-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	200	%	30

* Sample used for QC is not from job FA93474

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q776-IBLK	3Q56398.D	1	03/15/22	NG	n/a	n/a	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	88%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q776-IBLK	3Q56398.D	1	03/15/22	NG	n/a	n/a	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	85%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	88%	50-150%

Instrument Blank

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q777-IBLK	3Q56479.D	1	03/16/22	NG	n/a	n/a	S3Q777

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	97%	50-150%

Method Blank Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-MB	3Q56403.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	64%	50-150%
	13C5-PFPeA	67%	50-150%
	13C5-PFHxA	69%	50-150%
	13C4-PFHpA	70%	50-150%
	13C8-PFOA	72%	50-150%
	13C9-PFNA	74%	50-150%
	13C6-PFDA	74%	50-150%

Method Blank Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-MB	3Q56403.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	66%	50-150%
	13C2-PFTeDA	60%	50-150%
	13C3-PFBS	68%	50-150%
	13C3-PFHxS	70%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	69%	50-150%
	d3-MeFOSAA	79%	50-150%
	d5-EtFOSAA	70%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	77%	50-150%
	13C2-8:2FTS	68%	50-150%

Blank Spike Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-BS	3Q56402.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.150	94	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.155	97	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.152	95	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.158	99	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.158	99	71-133
375-95-1	Perfluorononanoic acid	0.16	0.166	104	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.146	91	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.153	96	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.167	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.168	105	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.159	99	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.158	99	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.157	98	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.166	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.163	102	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.149	93	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.158	99	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.141	88	53-142
754-91-6	PFOSA	0.16	0.153	96	67-137
2355-31-9	MeFOSAA	0.16	0.155	97	65-136
2991-50-6	EtFOSAA	0.16	0.163	102	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.155	97	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.159	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.155	97	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.138	86	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	74%	50-150%
	13C5-PFPeA	77%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	79%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	86%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-BS	3Q56402.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	75%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	79%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	77%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-MS	3Q56410.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-6	3Q56409.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-6	3Q56534.D	5	03/17/22	NG	03/03/22	OP90063	S3Q777

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	Compound	FA93474-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U		0.154	0.152	99	73-129
2706-90-3	Perfluoropentanoic acid	0.0035	J	0.154	0.157	100	72-129
307-24-4	Perfluorohexanoic acid	0.0039	J	0.154	0.157	100	72-129
375-85-9	Perfluoroheptanoic acid	0.0077 U		0.154	0.156	101	72-130
335-67-1	Perfluorooctanoic acid	0.0077 U		0.154	0.161	105	71-133
375-95-1	Perfluorononanoic acid	0.0077 U		0.154	0.161	105	69-130
335-76-2	Perfluorodecanoic acid	0.0077 U		0.154	0.146	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.0077 U		0.154	0.153	99	69-133
307-55-1	Perfluorododecanoic acid	0.0077 U		0.154	0.166	108	72-134
72629-94-8	Perfluorotridecanoic acid	0.0077 U		0.154	0.168	109	65-144
376-06-7	Perfluorotetradecanoic acid	0.038 U [a]		0.154	0.157	102	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0026	J	0.154	0.160	102	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0033	J	0.154	0.170	108	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0310		0.154	0.189	103	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U		0.154	0.164	107	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0533		0.154	0.202	97	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0077 U		0.154	0.149	97	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0077 U		0.154	0.133	86	53-142
754-91-6	PFOSA	0.0077 U		0.154	0.152	99	67-137
2355-31-9	MeFOSAA	0.015 U		0.154	0.154	100	65-136
2991-50-6	EtFOSAA	0.015 U		0.154	0.161	105	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U		0.154	0.158	103	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U		0.154	0.161	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U		0.154	0.153	99	67-138
13252-13-6	HFPO-DA (GenX)	0.015 U		0.154	0.147	96	60-140

CAS No.	ID Standard Recoveries	MS	FA93474-6	FA93474-6	Limits
	13C4-PFBA	65%	52%	64%	50-150%
	13C5-PFPeA	68%	54%	65%	50-150%
	13C5-PFHxA	73%	58%	69%	50-150%
	13C4-PFHpA	76%	61%	70%	50-150%
	13C8-PFOA	79%	64%	74%	50-150%
	13C9-PFNA	80%	63%	75%	50-150%
	13C6-PFDA	81%	64%	75%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-MS	3Q56410.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-6	3Q56409.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-6	3Q56534.D	5	03/17/22	NG	03/03/22	OP90063	S3Q777

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	ID Standard Recoveries	MS	FA93474-6	FA93474-6	Limits
	13C7-PFUnDA	78%	61%	75%	50-150%
	13C2-PFDoDA	68%	52%	68%	50-150%
	13C2-PFTeDA	60%	44%* [b]	70%	50-150%
	13C3-PFBS	69%	55%	70%	50-150%
	13C3-PFHxS	77%	59%	70%	50-150%
	13C8-PFOS	78%	61%	69%	50-150%
	13C8-FOSA	69%	61%	73%	50-150%
	d3-MeFOSAA	85%	68%	84%	50-150%
	d5-EtFOSAA	80%	63%	79%	50-150%
	13C2-4:2FTS	75%	61%	78%	50-150%
	13C2-6:2FTS	85%	70%	85%	50-150%
	13C2-8:2FTS	76%	59%	70%	50-150%
	13C3-HFPO-DA		62%	71%	50-150%

(a) Result is from Run #2.
(b) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-DUP	3Q56414.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-7	3Q56413.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	Compound	FA93474-7 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015	U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0038	J	0.0037	J	3	30
307-24-4	Perfluorohexanoic acid	0.0039	J	0.0043	J	10	30
375-85-9	Perfluoroheptanoic acid	0.0077	U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0077	U	0.0021	J	200*	30
375-95-1	Perfluorononanoic acid	0.0077	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0077	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0077	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0077	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0077	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0077	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0027	J	0.0025	J	8	30
2706-91-4	Perfluoropentanesulfonic acid	0.0032	J	0.0035	J	9	30
355-46-4	Perfluorohexanesulfonic acid	0.0322		0.0307		5	30
375-92-8	Perfluoroheptanesulfonic acid	0.0077	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0532		0.0572		7	30
68259-12-1	Perfluorononanesulfonic acid	0.0077	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0077	U	ND		nc	30
754-91-6	PFOSA	0.0077	U	ND		nc	30
2355-31-9	MeFOSAA	0.015	U	ND		nc	30
2991-50-6	EtFOSAA	0.015	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.015	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.015	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.015	U	0.0039	J	200*	30
13252-13-6	HFPO-DA (GenX)	0.015	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93474-7	Limits
	13C4-PFBA	56%	54%	50-150%
	13C5-PFPeA	60%	57%	50-150%
	13C5-PFHxA	64%	61%	50-150%
	13C4-PFHpA	66%	64%	50-150%
	13C8-PFOA	70%	67%	50-150%
	13C9-PFNA	71%	67%	50-150%
	13C6-PFDA	72%	67%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93474
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90063-DUP	3Q56414.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776
FA93474-7	3Q56413.D	1	03/15/22	NG	03/03/22	OP90063	S3Q776

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93474-1, FA93474-2, FA93474-3, FA93474-4, FA93474-5, FA93474-6, FA93474-7, FA93474-8, FA93474-9, FA93474-10, FA93474-11, FA93474-12, FA93474-13, FA93474-14, FA93474-15, FA93474-16, FA93474-17, FA93474-18

CAS No.	ID Standard Recoveries	DUP	FA93474-7	Limits
	13C7-PFUnDA	71%	65%	50-150%
	13C2-PFDoDA	61%	56%	50-150%
	13C2-PFTeDA	55%	53%	50-150%
	13C3-PFBS	60%	58%	50-150%
	13C3-PFHxS	67%	63%	50-150%
	13C8-PFOS	67%	63%	50-150%
	13C8-FOSA	68%	62%	50-150%
	d3-MeFOSAA	76%	71%	50-150%
	d5-EtFOSAA	72%	69%	50-150%
	13C2-4:2FTS	67%	64%	50-150%
	13C2-6:2FTS	79%	73%	50-150%
	13C2-8:2FTS	65%	61%	50-150%
	13C3-HFPO-DA		63%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

SGS Job Number: FA93545

Sampling Dates: 02/28/22 - 03/01/22



Report to:

HGL, Inc
2405 N Courtenay Pkwy Suite 203
Merritt Island, FL 32953
drivers@hgl.com

ATTN: Denise Rivers

Total number of pages in report: **127**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Sample Summary

Hydrogeologic, Inc.

Job No: FA93545

NASA TQN 21- SLF PFAS Assessment

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93545-1	02/28/22	09:28	JB	03/02/22	AQ	Ground Water	S014-DPT1003-005.0-20220228
FA93545-2	02/28/22	09:41	JB	03/02/22	AQ	Ground Water	S014-DPT1003-015.0-20220228
FA93545-3	02/28/22	09:58	JB	03/02/22	AQ	Ground Water	S014-DPT1003-025.0-20220228
FA93545-4	02/28/22	10:25	JB	03/02/22	AQ	Ground Water	S014-DPT1003-035.0-20220228
FA93545-5	02/28/22	11:12	JB	03/02/22	AQ	Ground Water	S014-DPT1003-045.0-20220228
FA93545-6	02/28/22	11:12	JB	03/02/22	AQ	Ground Water	S014-FD-20220228-01
FA93545-7	02/28/22	13:10	JB	03/02/22	AQ	Ground Water	S014-DPT0180-055.0-20220228
FA93545-8	02/28/22	13:47	JB	03/02/22	AQ	Ground Water	S014-DPT1004-005.0-20220228
FA93545-9	02/28/22	14:03	JB	03/02/22	AQ	Ground Water	S014-DPT1004-015.0-20220228
FA93545-10	02/28/22	14:25	JB	03/02/22	AQ	Ground Water	S014-DPT1004-025.0-20220228
FA93545-11	02/28/22	14:53	JB	03/02/22	AQ	Ground Water	S014-DPT1004-035.0-20220228
FA93545-12	02/28/22	15:23	JB	03/02/22	AQ	Ground Water	S014-DPT1004-045.0-20220228
FA93545-13	02/28/22	16:05	JB	03/02/22	AQ	Ground Water	S014-DPT1005-005.0-20220228

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93545

NASA TQN 21- SLF PFAS Assessment

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93545-14	02/28/22	16:17	JB	03/02/22	AQ	Ground Water	S014-DPT1005-015.0-20220228
FA93545-15	02/28/22	16:17	JB	03/02/22	AQ	Ground Water	S014-FD-20220228-02
FA93545-16	02/28/22	16:30	JB	03/02/22	AQ	Field Blank Water	S014-FB-20220228-01
FA93545-17	02/28/22	16:35	JB	03/02/22	AQ	Equipment Blank	S014-EB-20220228-01
FA93545-18	03/01/22	07:55	JB	03/02/22	AQ	Ground Water	S014-DPT1005-025.0-20220301
FA93545-19	03/01/22	08:21	JB	03/02/22	AQ	Ground Water	S014-DPT1005-035.0-20220301
FA93545-20	03/01/22	08:47	JB	03/02/22	AQ	Ground Water	S014-DPT1005-045.0-20220301
FA93545-21	03/01/22	09:45	JB	03/02/22	AQ	Ground Water	S014-DPT1006-005.0-20220301
FA93545-22	03/01/22	09:57	JB	03/02/22	AQ	Ground Water	S014-DPT1006-015.0-20220301
FA93545-23	03/01/22	10:16	JB	03/02/22	AQ	Ground Water	S014-DPT1006-025.0-20220301
FA93545-24	03/01/22	10:45	JB	03/02/22	AQ	Ground Water	S014-DPT1006-035.0-20220301
FA93545-25	03/01/22	11:12	JB	03/02/22	AQ	Ground Water	S014-DPT1006-045.0-20220301
FA93545-26	03/01/22	12:48	JB	03/02/22	AQ	Ground Water	S014-DPT1007-005.0-20220301

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93545

NASA TQN 21- SLF PFAS Assessment

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93545-27	03/01/22	13:01	JB	03/02/22	AQ	Ground Water	S014-DPT1007-015.0-20220301
FA93545-28	03/01/22	13:15	JB	03/02/22	AQ	Ground Water	S014-DPT1007-025.0-20220301
FA93545-29	03/01/22	13:15	JB	03/02/22	AQ	Ground Water	S014-FD-20220301-01
FA93545-30	03/01/22	13:43	JB	03/02/22	AQ	Ground Water	S014-DPT1007-035.0-20220301
FA93545-31	03/01/22	14:12	JB	03/02/22	AQ	Ground Water	S014-DPT1007-045.0-20220301
FA93545-32	03/01/22	15:00	JB	03/02/22	AQ	Ground Water	S014-DPT1008-005.0-20220301
FA93545-33	03/01/22	15:11	JB	03/02/22	AQ	Ground Water	S014-DPT1008-015.0-20220301
FA93545-34	03/01/22	15:28	JB	03/02/22	AQ	Ground Water	S014-DPT1008-025.0-20220301
FA93545-35	03/01/22	15:48	JB	03/02/22	AQ	Ground Water	S014-DPT1008-035.0-20220301
FA93545-36	03/01/22	16:11	JB	03/02/22	AQ	Ground Water	S014-DPT1008-045.0-20220301
FA93545-37	03/01/22	16:45	JB	03/02/22	AQ	Field Blank Water	S014-FB-20220301-01
FA93545-38	03/01/22	16:50	JB	03/02/22	AQ	Equipment Blank	S014-EB-20220301-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93545

Site: NASA TQN 21- SLF PFAS Assessment **Report Date** 3/28/2022 12:06:23

On 03/02/2022, 36 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93545 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90088

Sample(s) FA93545-1MS, FA93545-9DUP were used as the QC samples indicated.

Sample(s) FA93545-1, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-18, FA93545-2, FA93545-3, FA93545-4, FA93545-6 have surrogates outside control limits.

FA93545-1 for 13C4-PFBA: Outside control limits.

FA93545-1 for 13C5-PFPeA: Outside control limits.

FA93545-1: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-2 for 13C2-PFTeDA: Outside control limits.

FA93545-2 for 13C2-PFTeDA: Outside control limits.

FA93545-2 for 13C3-HFPO-DA: Outside control limits.

FA93545-2 for 13C3-PFBS: Outside control limits.

FA93545-2 for 13C4-PFBA: Outside control limits.

FA93545-2 for 13C5-PFHxA: Outside control limits.

FA93545-2 for 13C5-PFPeA: Outside control limits.

FA93545-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA93545-3 for 13C4-PFBA: Outside control limits.

FA93545-3 for 13C5-PFPeA: Outside control limits.

FA93545-3: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-4 for 13C4-PFBA: Outside control limits.

FA93545-4 for 13C5-PFPeA: Outside control limits.

FA93545-4: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-6 for 13C4-PFBA: Outside control limits.

FA93545-6 for 13C5-PFPeA: Outside control limits.

FA93545-6: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-12 for 13C2-8:2FTS: Outside control limits.

FA93545-12 for 13C3-PFBS: Outside control limits.

FA93545-12 for 13C4-PFBA: Outside control limits.

FA93545-12 for 13C5-PFPeA: Outside control limits.

FA93545-12 for d5-EtFOSAA: Outside control limits.

FA93545-13 for 13C2-PFTeDA: Outside control limits.

FA93545-13 for 13C2-PFTeDA: Outside control limits.

FA93545-13 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA93545-14 for 13C2-PFTeDA: Outside control limits.

FA93545-14 for 13C2-PFTeDA: Outside control limits.

FA93545-14 for 13C4-PFHpA: Outside control limits.

FA93545-14 for 13C8-PFOS: Outside control limits.

FA93545-14 for d3-MeFOSAA: Outside control limits.

FA93545-15 for 13C2-PFTeDA: Outside control limits.

FA93545-15 for 13C8-PFOS: Outside control limits.

FA93545-15 for 13C9-PFNA: Outside control limits.

FA93545-15 for d3-MeFOSAA: Outside control limits.

FA93545-18 for 13C2-PFTeDA: Outside control limits.

FA93545-18 for 13C2-PFTeDA: Outside control limits.

FA93545-18 for 13C4-PFBA: Outside control limits.

FA93545-18 for 13C5-PFHxA: Outside control limits.

FA93545-18 for 13C5-PFPeA: Outside control limits.

FA93545-18 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP90089

Sample(s) FA93545-23MS, FA93545-34DUP were used as the QC samples indicated.

Sample(s) FA93545-21, FA93545-29, FA93545-30, FA93545-33, FA93545-34, FA93545-36 have surrogates outside control limits.

FA93545-21 for 13C4-PFBA: Outside control limits.

FA93545-21: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-29 for 13C2-PFTeDA: Outside control limits.

FA93545-29: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-30 for 13C2-PFTeDA: Outside control limits.

FA93545-30: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-33 for 13C4-PFBA: Outside control limits.

FA93545-33 for 13C5-PFPeA: Outside control limits.

FA93545-33: Dilution required due to matrix interference (ID recovery standard failure).

FA93545-34 for 13C4-PFBA: Outside control limits.

FA93545-34 for 13C5-PFPeA: Outside control limits.

FA93545-34 for Perfluorobutanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.

FA93545-34 for Perfluoropentanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.

FA93545-36 for 13C4-PFBA: Outside control limits.

FA93545-36 for 13C5-PFPeA: Outside control limits.

FA93545-36: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93545-1	**S014-DPT1003-005.0-20220228**					
No hits reported in this sample.						
FA93545-2	**S014-DPT1003-015.0-20220228**					
Perfluorooctanesulfonic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-3	**S014-DPT1003-025.0-20220228**					
Perfluorooctanoic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0100	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-4	**S014-DPT1003-035.0-20220228**					
Perfluorohexanoic acid		0.0039 J	0.011	0.0053	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0051 J	0.011	0.0053	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0077 J	0.011	0.0053	ug/l	EPA 537M QSM5.3 B-15
FA93545-5	**S014-DPT1003-045.0-20220228**					
Perfluorobutanoic acid		0.0488	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0392	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0338	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0381	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0438	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0417	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0397	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroundecanoic acid		0.0433	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorododecanoic acid		0.0447	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorotridecanoic acid		0.0497	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorotetradecanoic acid		0.0373	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0147	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-6	**S014-FD-20220228-01**					
Perfluorohexanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0075 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-7	**S014-DPT0180-055.0-20220228**					
Perfluorohexanoic acid		0.0024 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0069 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-8	**S014-DPT1004-005.0-20220228**					
Perfluorobutanoic acid		0.0119 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0233	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0189	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0180	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0164	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0056 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0398	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.171	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-9	**S014-DPT1004-015.0-20220228**					
Perfluorobutanoic acid		0.0108 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0082	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0076 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0067 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0248	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0793	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-10	**S014-DPT1004-025.0-20220228**					
Perfluorobutanoic acid		0.0113 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0152	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0097	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0220	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.257	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-11	**S014-DPT1004-035.0-20220228**					
Perfluorobutanoic acid		0.0393	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0860	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0704	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0486	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0212	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0189	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorobutanesulfonic acid		0.0434	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0493	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.334	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0223	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.694	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0067 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-12	**S014-DPT1004-045.0-20220228**					
Perfluorobutanoic acid		0.0516 J	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0882	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.237	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0538	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0803	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.287	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.290	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		1.09	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0518	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.554	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0283	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-13	**S014-DPT1005-005.0-20220228**					
Perfluorobutanoic acid		0.280	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.951	0.20	0.10	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.973	0.20	0.10	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.347	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.267	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0398	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0041 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.399	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.435	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		2.65	0.20	0.10	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.175	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		3.63	0.20	0.10	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0106	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0088 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		1.68	0.40	0.20	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0225	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
FA93545-14	**S014-DPT1005-015.0-20220228**					
Perfluorobutanoic acid		0.900	0.32	0.16	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		3.47	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		3.74	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoroheptanoic acid		1.25	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.889	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0923	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0188	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		1.23	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		1.35	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		10.6	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.723	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		47.8	4.0	2.0	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0902 J	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0185	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0223	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		5.71	0.32	0.16	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.202	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-15	**S014-FD-20220228-02**					
Perfluorobutanoic acid		0.861	0.33	0.17	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		3.35	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		3.62	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		1.18	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.884	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0978 J	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0196	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		1.19	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		1.32	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		10.2	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.666	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		50.2	4.2	2.1	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0938 J	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0188	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0211	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		5.67	0.33	0.17	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.199	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15

FA93545-16 **S014-FB-20220228-01**

No hits reported in this sample.

FA93545-17 **S014-EB-20220228-01**

No hits reported in this sample.

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93545-18	**S014-DPT1005-025.0-20220301**					
Perfluorobutanoic acid		0.348	0.32	0.16	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		1.26	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		1.26	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.786	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.627	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0641	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.551	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.579	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		3.44	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.223	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		4.72	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0578	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		1.43	0.32	0.16	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0700	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-19	**S014-DPT1005-035.0-20220301**					
Perfluorobutanoic acid		0.0995	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.377	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.341	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.171	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0882	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0046 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.123	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.133	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.745	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0329	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.07	0.091	0.045	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0024 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0128 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.441	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0063 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
FA93545-20	**S014-DPT1005-045.0-20220301**					
Perfluorobutanoic acid		0.0087 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0343	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0332	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0126	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0095	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0123	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0136	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		0.0925	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.306	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0577	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-21	**S014-DPT1006-005.0-20220301**					
Perfluorooctanoic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0227	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-22	**S014-DPT1006-015.0-20220301**					
Perfluorobutanoic acid		0.0068 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0042 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0038 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0147	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0079 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0025 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0732	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93545-23	**S014-DPT1006-025.0-20220301**					
Perfluoropentanoic acid		0.0025 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0064 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0124	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0400	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93545-24	**S014-DPT1006-035.0-20220301**					
Perfluoropentanoic acid		0.0052 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0062 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0028 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0065 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0041 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0040 J	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0222	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0447	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
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Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93545-25	**S014-DPT1006-045.0-20220301**					
Perfluoropentanoic acid		0.0055 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0047 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0090	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0198	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0048 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-26	**S014-DPT1007-005.0-20220301**					
Perfluorobutanoic acid		0.0056 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0046 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0081	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0079 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0185	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-27	**S014-DPT1007-015.0-20220301**					
Perfluoropentanoic acid		0.0070 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0072 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0054 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0047 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-28	**S014-DPT1007-025.0-20220301**					
No hits reported in this sample.						
FA93545-29	**S014-FD-20220301-01**					
No hits reported in this sample.						
FA93545-30	**S014-DPT1007-035.0-20220301**					
No hits reported in this sample.						
FA93545-31	**S014-DPT1007-045.0-20220301**					
PFOSA		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93545-32	**S014-DPT1008-005.0-20220301**					
No hits reported in this sample.						
FA93545-33	**S014-DPT1008-015.0-20220301**					
Perfluoropentanoic acid [a]		0.0130 J	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0082	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0036 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0042 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0212	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0162	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0046 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93545-34	**S014-DPT1008-025.0-20220301**					
Perfluorobutanoic acid [b]		0.0071 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0027 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0023 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0044 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0189	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93545-35	**S014-DPT1008-035.0-20220301**					
Perfluorobutanoic acid		0.0044 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0213	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-36	**S014-DPT1008-045.0-20220301**					
Perfluorooctanoic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0024 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93545-37	**S014-FB-20220301-01**					
No hits reported in this sample.						
FA93545-38	**S014-EB-20220301-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by batch QC.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-DPT1003-005.0-20220228
Lab Sample ID: FA93545-1 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56788.D	1	03/22/22 15:52	MV	03/04/22 08:00	OP90088	S3Q780
Run #2 [a]	3Q56907.D	5	03/24/22 08:02	MV	03/04/22 08:00	OP90088	S3Q781

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1003-005.0-20220228		
Lab Sample ID:	FA93545-1	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [c]	87%	50-150%
	13C5-PFPeA	48% [c]	88%	50-150%
	13C5-PFHxA	56%	92%	50-150%
	13C4-PFHpA	65%	97%	50-150%
	13C8-PFOA	71%	102%	50-150%
	13C9-PFNA	73%	102%	50-150%
	13C6-PFDA	73%	97%	50-150%
	13C7-PFUnDA	72%	95%	50-150%
	13C2-PFDoDA	68%	90%	50-150%
	13C2-PFTeDA	58%	76%	50-150%
	13C3-PFBS	52%	91%	50-150%
	13C3-PFHxS	66%	99%	50-150%
	13C8-PFOS	73%	99%	50-150%
	13C8-FOSA	51%	74%	50-150%
	d3-MeFOSAA	83%	123%	50-150%
	d5-EtFOSAA	87%	126%	50-150%
	13C2-4:2FTS	64%	104%	50-150%
	13C2-6:2FTS	82%	115%	50-150%
	13C2-8:2FTS	77%	106%	50-150%
	13C3-HFPO-DA	52%	80%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1003-015.0-20220228
Lab Sample ID: FA93545-2 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56586.D	1	03/17/22 22:40	JB	03/04/22 08:00	OP90088	S3Q778
Run #2	3Q56789.D	5	03/22/22 16:11	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [a]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [a]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.020 U [a]	0.040	0.020	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.020 U [a]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [a]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [a]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1003-015.0-20220228		
Lab Sample ID:	FA93545-2	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [a]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	36% [c]	79%	50-150%
	13C5-PFPeA	32% [c]	77%	50-150%
	13C5-PFHxA	46% [c]	85%	50-150%
	13C4-PFHpA	63%	97%	50-150%
	13C8-PFOA	82%	108%	50-150%
	13C9-PFNA	91%	111%	50-150%
	13C6-PFDA	98%	111%	50-150%
	13C7-PFUnDA	93%	104%	50-150%
	13C2-PFDoDA	75%	92%	50-150%
	13C2-PFTeDA	39% [c]	49% [c]	50-150%
	13C3-PFBS	43% [c]	82%	50-150%
	13C3-PFHxS	67%	104%	50-150%
	13C8-PFOS	88%	112%	50-150%
	13C8-FOSA	56%	82%	50-150%
	d3-MeFOSAA	101%	113%	50-150%
	d5-EtFOSAA	90%	113%	50-150%
	13C2-4:2FTS	54%	96%	50-150%
	13C2-6:2FTS	102%	122%	50-150%
	13C2-8:2FTS	96%	133%	50-150%
	13C3-HFPO-DA	43% [c]	85%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1003-025.0-20220228
Lab Sample ID: FA93545-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56587.D	1	03/17/22 22:59	JB	03/04/22 08:00	OP90088	S3Q778
Run #2 [a]	3Q56790.D	5	03/22/22 16:29	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0100	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1003-025.0-20220228		
Lab Sample ID:	FA93545-3	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	94%	50-150%
	13C5-PFPeA	47% [c]	93%	50-150%
	13C5-PFHxA	57%	98%	50-150%
	13C4-PFHpA	65%	108%	50-150%
	13C8-PFOA	77%	116%	50-150%
	13C9-PFNA	79%	114%	50-150%
	13C6-PFDA	79%	109%	50-150%
	13C7-PFUnDA	74%	101%	50-150%
	13C2-PFDoDA	62%	91%	50-150%
	13C2-PFTeDA	56%	81%	50-150%
	13C3-PFBS	53%	96%	50-150%
	13C3-PFHxS	70%	105%	50-150%
	13C8-PFOS	72%	103%	50-150%
	13C8-FOSA	74%	106%	50-150%
	d3-MeFOSAA	86%	115%	50-150%
	d5-EtFOSAA	79%	117%	50-150%
	13C2-4:2FTS	64%	108%	50-150%
	13C2-6:2FTS	89%	120%	50-150%
	13C2-8:2FTS	78%	121%	50-150%
	13C3-HFPO-DA	55%	94%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1003-035.0-20220228
Lab Sample ID: FA93545-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56588.D	1	03/17/22 23:17	JB	03/04/22 08:00	OP90088	S3Q778
Run #2 [a]	3Q56791.D	5	03/22/22 16:48	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	95.0 ml	1.0 ml
Run #2	95.0 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.053 U [b]	0.11	0.053	0.026	ug/l	
2706-90-3	Perfluoropentanoic acid	0.026 U [b]	0.053	0.026	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.0039	0.011	0.0053	0.0026	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
335-67-1	Perfluorooctanoic acid	0.0051	0.011	0.0053	0.0026	ug/l	J
375-95-1	Perfluorononanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
335-76-2	Perfluorodecanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
307-55-1	Perfluorododecanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077	0.011	0.0053	0.0026	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0053 U	0.011	0.0053	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.011 U	0.021	0.011	0.0053	ug/l	
2991-50-6	EtFOSAA	0.011 U	0.021	0.011	0.0053	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.011 U	0.021	0.011	0.0053	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.011 U	0.021	0.011	0.0053	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1003-035.0-20220228		
Lab Sample ID:	FA93545-4	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.011 U	0.021	0.011	0.0053	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.011 U	0.021	0.011	0.0053	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [c]	98%	50-150%
	13C5-PFPeA	48% [c]	96%	50-150%
	13C5-PFHxA	61%	104%	50-150%
	13C4-PFHpA	70%	111%	50-150%
	13C8-PFOA	83%	119%	50-150%
	13C9-PFNA	86%	118%	50-150%
	13C6-PFDA	92%	115%	50-150%
	13C7-PFUnDA	91%	113%	50-150%
	13C2-PFDoDA	78%	106%	50-150%
	13C2-PFTeDA	66%	89%	50-150%
	13C3-PFBS	56%	102%	50-150%
	13C3-PFHxS	75%	108%	50-150%
	13C8-PFOS	86%	117%	50-150%
	13C8-FOSA	85%	116%	50-150%
	d3-MeFOSAA	102%	127%	50-150%
	d5-EtFOSAA	91%	129%	50-150%
	13C2-4:2FTS	69%	113%	50-150%
	13C2-6:2FTS	99%	131%	50-150%
	13C2-8:2FTS	86%	125%	50-150%
	13C3-HFPO-DA	60%	99%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1003-045.0-20220228
Lab Sample ID: FA93545-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56589.D	1	03/17/22 23:36	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0488	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0392	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0338	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0381	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0438	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0417	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0397	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0433	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0447	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0497	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0373	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0147	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1003-045.0-20220228		
Lab Sample ID:	FA93545-5	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%		50-150%
	13C5-PFPeA	53%		50-150%
	13C5-PFHxA	61%		50-150%
	13C4-PFHpA	64%		50-150%
	13C8-PFOA	73%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	78%		50-150%
	13C7-PFUnDA	77%		50-150%
	13C2-PFDoDA	65%		50-150%
	13C2-PFTeDA	53%		50-150%
	13C3-PFBS	59%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	72%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220228-01
Lab Sample ID: FA93545-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56592.D	1	03/18/22 00:31	JB	03/04/22 08:00	OP90088	S3Q778
Run #2 [a]	3Q56792.D	5	03/22/22 17:06	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0075	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220228-01
Lab Sample ID: FA93545-6 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	96%	50-150%
	13C5-PFPeA	47% [c]	95%	50-150%
	13C5-PFHxA	57%	100%	50-150%
	13C4-PFHpA	67%	109%	50-150%
	13C8-PFOA	77%	112%	50-150%
	13C9-PFNA	81%	112%	50-150%
	13C6-PFDA	83%	109%	50-150%
	13C7-PFUnDA	79%	103%	50-150%
	13C2-PFDoDA	67%	95%	50-150%
	13C2-PFTeDA	54%	82%	50-150%
	13C3-PFBS	53%	99%	50-150%
	13C3-PFHxS	71%	106%	50-150%
	13C8-PFOS	74%	105%	50-150%
	13C8-FOSA	72%	100%	50-150%
	d3-MeFOSAA	92%	120%	50-150%
	d5-EtFOSAA	81%	122%	50-150%
	13C2-4:2FTS	65%	116%	50-150%
	13C2-6:2FTS	90%	125%	50-150%
	13C2-8:2FTS	81%	132%	50-150%
	13C3-HFPO-DA	57%	98%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT0180-055.0-20220228
Lab Sample ID: FA93545-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56593.D	1	03/18/22 00:50	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0069	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT0180-055.0-20220228
Lab Sample ID: FA93545-7 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%		50-150%
	13C5-PFPeA	59%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	72%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	88%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	74%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	64%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	85%		50-150%
	13C3-HFPO-DA	67%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-005.0-20220228
Lab Sample ID: FA93545-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56793.D	1	03/22/22 17:25	MV	03/04/22 08:00	OP90088	S3Q780
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0119	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0233	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0189	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0180	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0164	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0056	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0398	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.171	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1004-005.0-20220228		
Lab Sample ID:	FA93545-8	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	103%		50-150%
	13C5-PFPeA	101%		50-150%
	13C5-PFHxA	104%		50-150%
	13C4-PFHpA	110%		50-150%
	13C8-PFOA	114%		50-150%
	13C9-PFNA	107%		50-150%
	13C6-PFDA	105%		50-150%
	13C7-PFUnDA	94%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	100%		50-150%
	13C3-PFHxS	105%		50-150%
	13C8-PFOS	96%		50-150%
	13C8-FOSA	103%		50-150%
	d3-MeFOSAA	110%		50-150%
	d5-EtFOSAA	107%		50-150%
	13C2-4:2FTS	110%		50-150%
	13C2-6:2FTS	123%		50-150%
	13C2-8:2FTS	113%		50-150%
	13C3-HFPO-DA	98%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-015.0-20220228
Lab Sample ID: FA93545-9 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56584.D	1	03/17/22 22:03	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0108	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0127	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0082	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0076	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0067	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0248	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0793	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1004-015.0-20220228		
Lab Sample ID:	FA93545-9	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	79%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	61%		50-150%
	13C2-PFTeDA	62%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	82%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	72%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-025.0-20220228
Lab Sample ID: FA93545-10 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56595.D	1	03/18/22 01:27	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0113	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0152	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0097	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0220	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.257	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1004-025.0-20220228		
Lab Sample ID:	FA93545-10	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	99%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	100%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	79%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-035.0-20220228
Lab Sample ID: FA93545-11 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56596.D	1	03/18/22 01:45	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0393	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0860	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0704	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0486	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0212	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0189	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0434	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0493	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.334	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0223	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.694	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0067	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-035.0-20220228
Lab Sample ID: FA93545-11 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	74%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	83%		50-150%
	13C2-PFDoDA	70%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	83%		50-150%
	13C3-HFPO-DA	70%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1004-045.0-20220228
Lab Sample ID: FA93545-12
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56597.D	1	03/18/22 02:04	JB	03/04/22 08:00	OP90088	S3Q778
Run #2	3Q56843.D	10	03/23/22 12:06	MV	03/04/22 08:00	OP90088	S3Q781

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0516 [a]	0.16	0.080	0.040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0882 [a]	0.080	0.040	0.020	ug/l	
307-24-4	Perfluorohexanoic acid	0.237	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0538	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0803	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.287 [a]	0.080	0.040	0.020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.290 [a]	0.080	0.040	0.020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.09 [a]	0.080	0.040	0.020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0518	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.554	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0283	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1004-045.0-20220228		
Lab Sample ID:	FA93545-12	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [b]	113%	50-150%
	13C5-PFPeA	42% [b]	115%	50-150%
	13C5-PFHxA	54%	118%	50-150%
	13C4-PFHpA	63%	127%	50-150%
	13C8-PFOA	78%	131%	50-150%
	13C9-PFNA	82%	129%	50-150%
	13C6-PFDA	89%	126%	50-150%
	13C7-PFUnDA	86%	129%	50-150%
	13C2-PFDoDA	73%	117%	50-150%
	13C2-PFTeDA	53%	86%	50-150%
	13C3-PFBS	49% [b]	114%	50-150%
	13C3-PFHxS	69%	127%	50-150%
	13C8-PFOS	78%	124%	50-150%
	13C8-FOSA	79%	127%	50-150%
	d3-MeFOSAA	97%	146%	50-150%
	d5-EtFOSAA	88%	158% [b]	50-150%
	13C2-4:2FTS	61%	127%	50-150%
	13C2-6:2FTS	94%	130%	50-150%
	13C2-8:2FTS	90%	174% [b]	50-150%
	13C3-HFPO-DA	56%	115%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1005-005.0-20220228
Lab Sample ID: FA93545-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56844.D	1.2	03/23/22 12:25	MV	03/04/22 08:00	OP90088	S3Q781
Run #2	3Q56845.D	24	03/23/22 12:43	MV	03/04/22 08:00	OP90088	S3Q781

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.280	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.951 [a]	0.20	0.10	0.050	ug/l	
307-24-4	Perfluorohexanoic acid	0.973 [a]	0.20	0.10	0.050	ug/l	
375-85-9	Perfluoroheptanoic acid	0.347	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.267	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0398	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0041	0.010	0.0050	0.0025	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.10 U [a]	0.20	0.10	0.050	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.399	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.435	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	2.65 [a]	0.20	0.10	0.050	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.175	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.63 [a]	0.20	0.10	0.050	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0106	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0088	0.020	0.010	0.0050	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	1.68 [a]	0.40	0.20	0.10	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1005-005.0-20220228		
Lab Sample ID:	FA93545-13	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0225	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%	112%	50-150%
	13C5-PFPeA	61%	113%	50-150%
	13C5-PFHxA	66%	111%	50-150%
	13C4-PFHpA	74%	115%	50-150%
	13C8-PFOA	82%	124%	50-150%
	13C9-PFNA	86%	105%	50-150%
	13C6-PFDA	87%	102%	50-150%
	13C7-PFUnDA	83%	97%	50-150%
	13C2-PFDoDA	76%	87%	50-150%
	13C2-PFTeDA	49% [c]	36% [c]	50-150%
	13C3-PFBS	67%	114%	50-150%
	13C3-PFHxS	73%	113%	50-150%
	13C8-PFOS	76%	111%	50-150%
	13C8-FOSA	57%	88%	50-150%
	d3-MeFOSAA	98%	115%	50-150%
	d5-EtFOSAA	101%	131%	50-150%
	13C2-4:2FTS	78%	124%	50-150%
	13C2-6:2FTS	93%	136%	50-150%
	13C2-8:2FTS	95%	128%	50-150%
	13C3-HFPO-DA	59%	104%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1005-015.0-20220228		
Lab Sample ID:	FA93545-14	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56846.D	1	03/23/22 13:02	MV	03/04/22 08:00	OP90088	S3Q781
Run #2	3Q56847.D	20	03/23/22 13:21	MV	03/04/22 08:00	OP90088	S3Q781
Run #3	3Q56848.D	500	03/23/22 13:45	MV	03/04/22 08:00	OP90088	S3Q781

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.900 [a]	0.32	0.16	0.080	ug/l	
2706-90-3	Perfluoropentanoic acid	3.47 [a]	0.16	0.080	0.040	ug/l	
307-24-4	Perfluorohexanoic acid	3.74 [a]	0.16	0.080	0.040	ug/l	
375-85-9	Perfluoroheptanoic acid	1.25 [a]	0.16	0.080	0.040	ug/l	
335-67-1	Perfluorooctanoic acid	0.889 [a]	0.16	0.080	0.040	ug/l	
375-95-1	Perfluorononanoic acid	0.0923	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0188	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	2.0 U [b]	4.0	2.0	1.0	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.23 [a]	0.16	0.080	0.040	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	1.35 [a]	0.16	0.080	0.040	ug/l	
355-46-4	Perfluorohexanesulfonic acid	10.6 [a]	0.16	0.080	0.040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.723 [a]	0.16	0.080	0.040	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	47.8 [b]	4.0	2.0	1.0	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0902 [a]	0.16	0.080	0.040	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0185	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.16 U [a]	0.32	0.16	0.080	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1005-015.0-20220228
Lab Sample ID: FA93545-14 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0223	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	5.71 [a]	0.32	0.16	0.080	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.202	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	70%	104%	87%	50-150%
	13C5-PFPeA	63%	107%	91%	50-150%
	13C5-PFHxA	63%	108%	91%	50-150%
	13C4-PFHpA	48% [c]	104%	90%	50-150%
	13C8-PFOA	72%	113%	92%	50-150%
	13C9-PFNA	52%	107%	92%	50-150%
	13C6-PFDA	94%	103%	92%	50-150%
	13C7-PFUnDA	86%	100%	91%	50-150%
	13C2-PFDoDA	74%	89%	90%	50-150%
	13C2-PFTeDA	40% [c]	49% [c]	87%	50-150%
	13C3-PFBS	66%	107%	87%	50-150%
	13C3-PFHxS	58%	107%	89%	50-150%
	13C8-PFOS	39% [c]	95%	85%	50-150%
	13C8-FOSA	56%	100%	94%	50-150%
	d3-MeFOSAA	24% [c]	117%	105%	50-150%
	d5-EtFOSAA	79%	126%	112%	50-150%
	13C2-4:2FTS	78%	118%	91%	50-150%
	13C2-6:2FTS	77%	142%	91%	50-150%
	13C2-8:2FTS	102%	126%	98%	50-150%
	13C3-HFPO-DA	61%	96%	76%	50-150%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220228-02		
Lab Sample ID:	FA93545-15	**Date Sampled:**	02/28/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56849.D	1	03/23/22 14:03	MV	03/04/22 08:00	OP90088	S3Q781
Run #2	3Q56850.D	20	03/23/22 14:22	MV	03/04/22 08:00	OP90088	S3Q781
Run #3	3Q56851.D	500	03/23/22 14:41	MV	03/04/22 08:00	OP90088	S3Q781

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml
Run #3	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.861 [a]	0.33	0.17	0.083	ug/l	
2706-90-3	Perfluoropentanoic acid	3.35 [a]	0.17	0.083	0.042	ug/l	
307-24-4	Perfluorohexanoic acid	3.62 [a]	0.17	0.083	0.042	ug/l	
375-85-9	Perfluoroheptanoic acid	1.18 [a]	0.17	0.083	0.042	ug/l	
335-67-1	Perfluorooctanoic acid	0.884 [a]	0.17	0.083	0.042	ug/l	
375-95-1	Perfluorononanoic acid	0.0978 [a]	0.17	0.083	0.042	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0196	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.083 U [a]	0.17	0.083	0.042	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.19 [a]	0.17	0.083	0.042	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	1.32 [a]	0.17	0.083	0.042	ug/l	
355-46-4	Perfluorohexanesulfonic acid	10.2 [a]	0.17	0.083	0.042	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.666 [a]	0.17	0.083	0.042	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	50.2 [b]	4.2	2.1	1.0	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0938 [a]	0.17	0.083	0.042	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0188	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.17 U [a]	0.33	0.17	0.083	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220228-02
Lab Sample ID: FA93545-15 **Date Sampled:** 02/28/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0211	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	5.67 [a]	0.33	0.17	0.083	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.199	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	70%	106%	79%	50-150%
	13C5-PFPeA	64%	111%	82%	50-150%
	13C5-PFHxA	63%	111%	83%	50-150%
	13C4-PFHpA	50%	110%	83%	50-150%
	13C8-PFOA	69%	113%	86%	50-150%
	13C9-PFNA	49% [c]	104%	85%	50-150%
	13C6-PFDA	81%	100%	83%	50-150%
	13C7-PFUnDA	79%	94%	84%	50-150%
	13C2-PFDoDA	73%	89%	83%	50-150%
	13C2-PFTeDA	48% [c]	60%	81%	50-150%
	13C3-PFBS	66%	110%	80%	50-150%
	13C3-PFHxS	54%	110%	83%	50-150%
	13C8-PFOS	37% [c]	103%	82%	50-150%
	13C8-FOSA	68%	101%	87%	50-150%
	d3-MeFOSAA	18% [c]	118%	100%	50-150%
	d5-EtFOSAA	94%	104%	102%	50-150%
	13C2-4:2FTS	76%	124%	84%	50-150%
	13C2-6:2FTS	72%	143%	85%	50-150%
	13C2-8:2FTS	87%	107%	85%	50-150%
	13C3-HFPO-DA	60%	108%	70%	50-150%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220228-01
Lab Sample ID: FA93545-16
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/28/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56601.D	1	03/18/22 03:18	JB	03/04/22 08:00	OP90088	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220228-01
Lab Sample ID: FA93545-16 **Date Sampled:** 02/28/22
Matrix: AQ - Field Blank Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	81%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	88%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	86%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	103%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	86%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220228-01
Lab Sample ID: FA93545-17 **Date Sampled:** 02/28/22
Matrix: AQ - Equipment Blank **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56906.D	1	03/24/22 07:43	MV	03/04/22 08:00	OP90088	S3Q781
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-EB-20220228-01		
Lab Sample ID:	FA93545-17	**Date Sampled:**	02/28/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	74%		50-150%
	13C8-PFOA	73%		50-150%
	13C9-PFNA	73%		50-150%
	13C6-PFDA	71%		50-150%
	13C7-PFUnDA	69%		50-150%
	13C2-PFDoDA	64%		50-150%
	13C2-PFTeDA	64%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	70%		50-150%
	13C8-PFOS	68%		50-150%
	13C8-FOSA	70%		50-150%
	d3-MeFOSAA	87%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	76%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	65%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1005-025.0-20220301
Lab Sample ID: FA93545-18
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56605.D	1	03/18/22 04:32	JB	03/04/22 08:00	OP90088	S3Q778
Run #2	3Q56809.D	20	03/22/22 21:56	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.348 [a]	0.32	0.16	0.080	ug/l	
2706-90-3	Perfluoropentanoic acid	1.26 [a]	0.16	0.080	0.040	ug/l	
307-24-4	Perfluorohexanoic acid	1.26 [a]	0.16	0.080	0.040	ug/l	
375-85-9	Perfluoroheptanoic acid	0.786	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.627	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0641	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.080 U [a]	0.16	0.080	0.040	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.551	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.579	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.44 [a]	0.16	0.080	0.040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.223	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	4.72 [a]	0.16	0.080	0.040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0028	0.0080	0.0040	0.0020	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0578	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	1.43 [a]	0.32	0.16	0.080	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1005-025.0-20220301		
Lab Sample ID:	FA93545-18	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0700	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	79%	50-150%
	13C5-PFPeA	44% [c]	80%	50-150%
	13C5-PFHxA	48% [c]	79%	50-150%
	13C4-PFHpA	51%	83%	50-150%
	13C8-PFOA	62%	82%	50-150%
	13C9-PFNA	69%	85%	50-150%
	13C6-PFDA	75%	88%	50-150%
	13C7-PFUnDA	73%	78%	50-150%
	13C2-PFDoDA	62%	71%	50-150%
	13C2-PFTeDA	38% [c]	45% [c]	50-150%
	13C3-PFBS	50%	83%	50-150%
	13C3-PFHxS	54%	84%	50-150%
	13C8-PFOS	61%	83%	50-150%
	13C8-FOSA	62%	80%	50-150%
	d3-MeFOSAA	71%	96%	50-150%
	d5-EtFOSAA	72%	95%	50-150%
	13C2-4:2FTS	57%	88%	50-150%
	13C2-6:2FTS	73%	93%	50-150%
	13C2-8:2FTS	78%	97%	50-150%
	13C3-HFPO-DA	50%	82%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1005-035.0-20220301
Lab Sample ID: FA93545-19
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56810.D	1	03/22/22 22:14	MV	03/04/22 08:00	OP90088	S3Q780
Run #2	3Q56811.D	10	03/22/22 22:33	MV	03/04/22 08:00	OP90088	S3Q780

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0995	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.377	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.341	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.171	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0882	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0046	0.0091	0.0045	0.0023	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.123	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.133	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.745	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0329	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.07 [a]	0.091	0.045	0.023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024	0.0091	0.0045	0.0023	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0128	0.018	0.0091	0.0045	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.441	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1005-035.0-20220301		
Lab Sample ID:	FA93545-19	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0063	0.018	0.0091	0.0045	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%	107%	50-150%
	13C5-PFPeA	76%	108%	50-150%
	13C5-PFHxA	83%	109%	50-150%
	13C4-PFHpA	92%	116%	50-150%
	13C8-PFOA	105%	120%	50-150%
	13C9-PFNA	109%	122%	50-150%
	13C6-PFDA	106%	118%	50-150%
	13C7-PFUnDA	102%	112%	50-150%
	13C2-PFDoDA	92%	103%	50-150%
	13C2-PFTeDA	57%	74%	50-150%
	13C3-PFBS	79%	113%	50-150%
	13C3-PFHxS	95%	118%	50-150%
	13C8-PFOS	99%	113%	50-150%
	13C8-FOSA	93%	114%	50-150%
	d3-MeFOSAA	114%	126%	50-150%
	d5-EtFOSAA	120%	131%	50-150%
	13C2-4:2FTS	93%	122%	50-150%
	13C2-6:2FTS	110%	130%	50-150%
	13C2-8:2FTS	127%	133%	50-150%
	13C3-HFPO-DA	77%	106%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1005-045.0-20220301
Lab Sample ID: FA93545-20
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56812.D	1	03/22/22 22:51	MV	03/04/22 08:00	OP90088	S3Q780
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0343	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0332	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0126	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0095	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0123	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0136	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0925	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.306	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0030	0.0080	0.0040	0.0020	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0577	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1005-045.0-20220301		
Lab Sample ID:	FA93545-20	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	77%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	93%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	101%		50-150%
	13C6-PFDA	105%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	89%		50-150%
	13C2-PFTeDA	65%		50-150%
	13C3-PFBS	79%		50-150%
	13C3-PFHxS	92%		50-150%
	13C8-PFOS	97%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	117%		50-150%
	d5-EtFOSAA	114%		50-150%
	13C2-4:2FTS	91%		50-150%
	13C2-6:2FTS	109%		50-150%
	13C2-8:2FTS	125%		50-150%
	13C3-HFPO-DA	74%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1006-005.0-20220301		
Lab Sample ID:	FA93545-21	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56617.D	1	03/18/22 08:15	JB	03/04/22 08:00	OP90089	S3Q778
Run #2 [a]	3Q56813.D	5	03/22/22 23:10	MV	03/04/22 08:00	OP90089	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0227	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1006-005.0-20220301		
Lab Sample ID:	FA93545-21	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [c]	80%	50-150%
	13C5-PFPeA	50%	81%	50-150%
	13C5-PFHxA	59%	83%	50-150%
	13C4-PFHpA	66%	87%	50-150%
	13C8-PFOA	74%	91%	50-150%
	13C9-PFNA	78%	88%	50-150%
	13C6-PFDA	81%	86%	50-150%
	13C7-PFUnDA	79%	84%	50-150%
	13C2-PFDoDA	68%	80%	50-150%
	13C2-PFTeDA	55%	63%	50-150%
	13C3-PFBS	58%	85%	50-150%
	13C3-PFHxS	74%	90%	50-150%
	13C8-PFOS	76%	91%	50-150%
	13C8-FOSA	67%	80%	50-150%
	d3-MeFOSAA	90%	102%	50-150%
	d5-EtFOSAA	81%	95%	50-150%
	13C2-4:2FTS	70%	93%	50-150%
	13C2-6:2FTS	91%	100%	50-150%
	13C2-8:2FTS	83%	96%	50-150%
	13C3-HFPO-DA	61%	78%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-015.0-20220301
Lab Sample ID: FA93545-22
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56618.D	1	03/18/22 08:33	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0068	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0042	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0038	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0147	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0079	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0025	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0732	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1006-015.0-20220301		
Lab Sample ID:	FA93545-22	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	89%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	66%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	104%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	100%		50-150%
	13C2-8:2FTS	89%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-025.0-20220301
Lab Sample ID: FA93545-23
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56613.D	1	03/18/22 07:01	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0025	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0064	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0124	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0400	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024	0.0083	0.0042	0.0021	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-025.0-20220301
Lab Sample ID: FA93545-23 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	88%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	83%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	97%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	83%		50-150%
	13C3-HFPO-DA	79%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-035.0-20220301
Lab Sample ID: FA93545-24
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56619.D	1	03/18/22 08:52	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	105 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0095 U	0.019	0.0095	0.0048	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0052	0.0095	0.0048	0.0024	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0062	0.0095	0.0048	0.0024	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0028	0.0095	0.0048	0.0024	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0065	0.0095	0.0048	0.0024	ug/l	J
375-95-1	Perfluorononanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-76-2	Perfluorodecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
307-55-1	Perfluorododecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0041	0.0095	0.0048	0.0024	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040	0.0095	0.0048	0.0024	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0222	0.0095	0.0048	0.0024	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0447	0.0095	0.0048	0.0024	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
2991-50-6	EtFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-035.0-20220301
Lab Sample ID: FA93545-24 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0095 U	0.019	0.0095	0.0048	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	84%		50-150%
	13C7-PFUnDA	83%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	77%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1006-045.0-20220301
Lab Sample ID: FA93545-25
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56622.D	1	03/18/22 09:47	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0055	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0047	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0090	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0198	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1006-045.0-20220301		
Lab Sample ID:	FA93545-25	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%		50-150%
	13C5-PFPeA	59%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	64%		50-150%
	13C3-PFBS	64%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	88%		50-150%
	d3-MeFOSAA	100%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	75%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-005.0-20220301
Lab Sample ID: FA93545-26
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56623.D	1	03/18/22 10:06	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0056	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0046	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0081	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0079	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0185	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-005.0-20220301
Lab Sample ID: FA93545-26 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	85%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	68%		50-150%
	13C2-PFTeDA	53%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	84%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-015.0-20220301
Lab Sample ID: FA93545-27
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56624.D	1	03/18/22 10:25	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0070	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0072	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0054	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0047	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-015.0-20220301
Lab Sample ID: FA93545-27 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	94%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	68%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	112%		50-150%
	d5-EtFOSAA	104%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	79%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-025.0-20220301
Lab Sample ID: FA93545-28
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56625.D	1	03/18/22 10:43	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-025.0-20220301
Lab Sample ID: FA93545-28 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	74%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	93%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	101%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	86%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	94%		50-150%
	d3-MeFOSAA	114%		50-150%
	d5-EtFOSAA	104%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	107%		50-150%
	13C2-8:2FTS	100%		50-150%
	13C3-HFPO-DA	83%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220301-01		
Lab Sample ID:	FA93545-29	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56626.D	1	03/18/22 11:02	JB	03/04/22 08:00	OP90089	S3Q778
Run #2 [a]	3Q56814.D	5	03/22/22 23:28	MV	03/04/22 08:00	OP90089	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220301-01		
Lab Sample ID:	FA93545-29	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	104%	50-150%
	13C5-PFPeA	57%	104%	50-150%
	13C5-PFHxA	66%	109%	50-150%
	13C4-PFHpA	73%	116%	50-150%
	13C8-PFOA	83%	120%	50-150%
	13C9-PFNA	85%	123%	50-150%
	13C6-PFDA	89%	116%	50-150%
	13C7-PFUnDA	87%	114%	50-150%
	13C2-PFDoDA	73%	102%	50-150%
	13C2-PFTeDA	46% [c]	62%	50-150%
	13C3-PFBS	62%	107%	50-150%
	13C3-PFHxS	77%	115%	50-150%
	13C8-PFOS	81%	118%	50-150%
	13C8-FOSA	84%	120%	50-150%
	d3-MeFOSAA	99%	134%	50-150%
	d5-EtFOSAA	90%	135%	50-150%
	13C2-4:2FTS	72%	118%	50-150%
	13C2-6:2FTS	97%	127%	50-150%
	13C2-8:2FTS	89%	143%	50-150%
	13C3-HFPO-DA	74%	99%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1007-035.0-20220301		
Lab Sample ID:	FA93545-30	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56627.D	1	03/18/22 11:20	JB	03/04/22 08:00	OP90089	S3Q778
Run #2 [a]	3Q56815.D	5	03/22/22 23:47	MV	03/04/22 08:00	OP90089	S3Q780

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087 U	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1007-035.0-20220301		
Lab Sample ID:	FA93545-30	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	98%	50-150%
	13C5-PFPeA	60%	98%	50-150%
	13C5-PFHxA	68%	101%	50-150%
	13C4-PFHpA	75%	106%	50-150%
	13C8-PFOA	82%	107%	50-150%
	13C9-PFNA	83%	108%	50-150%
	13C6-PFDA	89%	105%	50-150%
	13C7-PFUnDA	83%	97%	50-150%
	13C2-PFDoDA	68%	87%	50-150%
	13C2-PFTeDA	44% [c]	55%	50-150%
	13C3-PFBS	66%	102%	50-150%
	13C3-PFHxS	79%	103%	50-150%
	13C8-PFOS	78%	104%	50-150%
	13C8-FOSA	81%	107%	50-150%
	d3-MeFOSAA	96%	112%	50-150%
	d5-EtFOSAA	87%	117%	50-150%
	13C2-4:2FTS	76%	113%	50-150%
	13C2-6:2FTS	101%	124%	50-150%
	13C2-8:2FTS	87%	116%	50-150%
	13C3-HFPO-DA	74%	94%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-045.0-20220301
Lab Sample ID: FA93545-31
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56628.D	1	03/18/22 11:39	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0026	0.0083	0.0042	0.0021	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1007-045.0-20220301
Lab Sample ID: FA93545-31 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	93%		50-150%
	13C9-PFNA	96%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	68%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	110%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-005.0-20220301
Lab Sample ID: FA93545-32
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56629.D	1.3	03/18/22 11:57	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.010 U	0.021	0.010	0.0052	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
307-24-4	Perfluorohexanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-67-1	Perfluorooctanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
375-95-1	Perfluorononanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-76-2	Perfluorodecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
307-55-1	Perfluorododecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0052 U	0.010	0.0052	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.021	0.010	0.0052	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.021	0.010	0.0052	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-005.0-20220301
Lab Sample ID: FA93545-32 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.021	0.010	0.0052	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	95%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	101%		50-150%
	13C2-PFDoDA	94%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	89%		50-150%
	13C8-PFOS	93%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	118%		50-150%
	d5-EtFOSAA	111%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	115%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-015.0-20220301
Lab Sample ID: FA93545-33
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56630.D	1	03/18/22 12:16	JB	03/04/22 08:00	OP90089	S3Q778
Run #2 [a]	3Q56816.D	5	03/23/22 00:05	MV	03/04/22 08:00	OP90089	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0130 [b]	0.040	0.020	0.010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0082	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0038	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0036	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0212	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0162	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0046	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1008-015.0-20220301		
Lab Sample ID:	FA93545-33	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [c]	92%	50-150%
	13C5-PFPeA	42% [c]	88%	50-150%
	13C5-PFHxA	54%	95%	50-150%
	13C4-PFHpA	65%	106%	50-150%
	13C8-PFOA	80%	114%	50-150%
	13C9-PFNA	86%	113%	50-150%
	13C6-PFDA	92%	114%	50-150%
	13C7-PFUnDA	92%	112%	50-150%
	13C2-PFDoDA	81%	108%	50-150%
	13C2-PFTeDA	72%	96%	50-150%
	13C3-PFBS	51%	95%	50-150%
	13C3-PFHxS	74%	110%	50-150%
	13C8-PFOS	85%	116%	50-150%
	13C8-FOSA	69%	102%	50-150%
	d3-MeFOSAA	107%	128%	50-150%
	d5-EtFOSAA	95%	131%	50-150%
	13C2-4:2FTS	61%	111%	50-150%
	13C2-6:2FTS	102%	134%	50-150%
	13C2-8:2FTS	104%	121%	50-150%
	13C3-HFPO-DA	57%	86%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-025.0-20220301
Lab Sample ID: FA93545-34
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56615.D	1	03/18/22 07:38	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0071	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid [a]	0.0027	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0023	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0044	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0189	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1008-025.0-20220301		
Lab Sample ID:	FA93545-34	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [b]		50-150%
	13C5-PFPeA	48% [b]		50-150%
	13C5-PFHxA	58%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	78%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	95%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	71%		50-150%
	13C3-PFBS	56%		50-150%
	13C3-PFHxS	72%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	76%		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	59%		50-150%

(a) Associated ID Standard outside control limits, Confirmed by batch QC.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-035.0-20220301
Lab Sample ID: FA93545-35
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56631.D	1	03/18/22 12:34	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0044	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0213	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-035.0-20220301
Lab Sample ID: FA93545-35 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%		50-150%
	13C5-PFPeA	57%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	90%		50-150%
	13C9-PFNA	95%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	97%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	74%		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	114%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	78%		50-150%
	13C2-6:2FTS	108%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	71%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1008-045.0-20220301
Lab Sample ID: FA93545-36 **Date Sampled:** 03/01/22
Matrix: AQ - Ground Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56634.D	1	03/18/22 13:30	JB	03/04/22 08:00	OP90089	S3Q778
Run #2 [a]	3Q56817.D	5	03/23/22 00:24	MV	03/04/22 08:00	OP90089	S3Q780

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0024	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1008-045.0-20220301		
Lab Sample ID:	FA93545-36	**Date Sampled:**	03/01/22
Matrix:	AQ - Ground Water	**Date Received:**	03/02/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [c]	97%	50-150%
	13C5-PFPeA	46% [c]	93%	50-150%
	13C5-PFHxA	57%	98%	50-150%
	13C4-PFHpA	68%	106%	50-150%
	13C8-PFOA	78%	112%	50-150%
	13C9-PFNA	84%	112%	50-150%
	13C6-PFDA	87%	110%	50-150%
	13C7-PFUnDA	83%	103%	50-150%
	13C2-PFDoDA	70%	95%	50-150%
	13C2-PFTeDA	52%	77%	50-150%
	13C3-PFBS	53%	96%	50-150%
	13C3-PFHxS	70%	105%	50-150%
	13C8-PFOS	77%	110%	50-150%
	13C8-FOSA	78%	113%	50-150%
	d3-MeFOSAA	96%	126%	50-150%
	d5-EtFOSAA	86%	128%	50-150%
	13C2-4:2FTS	64%	109%	50-150%
	13C2-6:2FTS	96%	128%	50-150%
	13C2-8:2FTS	85%	115%	50-150%
	13C3-HFPO-DA	58%	88%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220301-01
Lab Sample ID: FA93545-37 **Date Sampled:** 03/01/22
Matrix: AQ - Field Blank Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56635.D	1	03/18/22 13:48	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220301-01
Lab Sample ID: FA93545-37 **Date Sampled:** 03/01/22
Matrix: AQ - Field Blank Water **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	89%		50-150%
	13C4-PFHpA	92%		50-150%
	13C8-PFOA	96%		50-150%
	13C9-PFNA	97%		50-150%
	13C6-PFDA	106%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	92%		50-150%
	13C8-FOSA	92%		50-150%
	d3-MeFOSAA	109%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	94%		50-150%
	13C2-6:2FTS	102%		50-150%
	13C2-8:2FTS	111%		50-150%
	13C3-HFPO-DA	97%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220301-01
Lab Sample ID: FA93545-38
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/01/22
Date Received: 03/02/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q56636.D	1	03/18/22 14:07	JB	03/04/22 08:00	OP90089	S3Q778
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220301-01
Lab Sample ID: FA93545-38 **Date Sampled:** 03/01/22
Matrix: AQ - Equipment Blank **Date Received:** 03/02/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	85%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	92%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	92%		50-150%
	d3-MeFOSAA	110%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	91%		50-150%
	13C2-6:2FTS	100%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 | FAX: 407-425-0707
www.sgs.com

FA93545

SGS - ORLANDO JOB # : PAGE 1 OF 4

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S014-DPT1003-005.0-20220228	2/28/22	0928	JB	GW	2		X								X	
2	S014-DPT1003-015.0-20220228	2/28/22	0941	JB	GW	2		X								X	
3	S014-DPT1003-025.0-20220228	2/28/22	0958	JB	GW	2		X								X	
4	S014-DPT1003-035.0-20220228	2/28/22	1025	JB	GW	2		X								X	
5	S014-DPT1003-045.0-20220228	2/28/22	1112	JB	GW	2		X								X	
6	S014-FD-20220228-01	2/28/22	1112	JB	GW	2		X								X	
7	PFAS-DPT0180-055.0-20220228	2/28/22	1310	JB	GW	2		X								X	
8	S014-DPT1004-005.0-20220228	2/28/22	1347	JB	GW	2		X								X	
9	S014-DPT1004-015.0-20220228	2/28/22	1403	JB	GW	2		X								X	
10	S014-DPT1004-025.0-20220228	2/28/22	1425	JB	GW	2		X								X	
11	S014-DPT1004-035.0-20220228	2/28/22	1453	JB	GW	2		X								X	
12	S014-DPT1004-045.0-20220228	2/28/22	1523	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	3/2/22 1130	2	3	3/2/22 14:14	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 3/2/22 14:14

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 4.4 4.4

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220301 Rev 031318

FA93545: Chain of Custody
Page 1 of 5

SGS North America Inc - Orlando

FA93545

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 4

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S014-DPT1005-005.0-20220228	2/28/22	1605	JB	GW	2		x								x	
14	S014-DPT1005-015.0-20220228	2/28/22	1617	JB	GW	2		x								x	
15	S014-FD-20220228-02	2/28/22	1617	JB	GW	2		x								x	
16	S014-FB-20220228-01	2/28/22	1630	JB	WW	2		x								x	
17	S014-EB-20220228-01	2/28/22	1635	JB	WW	2		x								x	
18	S014-DPT1005-025.0-20220301	3/1/22	0755	JB	GW	2		x								x	
19	S014-DPT1005-035.0-20220301	3/1/22	0821	JB	GW	2		x								x	
20	S014-DPT1005-045.0-20220301	3/1/22	0847	JB	GW	2		x								x	
21	S014-DPT1006-005.0-20220301	3/1/22	0945	JB	GW	2		x								x	
22	S014-DPT1006-015.0-20220301	3/1/22	0957	JB	GW	2		x								x	
23	S014-DPT1006-025.0-20220301	3/1/22	1016	JB	GW	2		x								x	
24	S014-DPT1006-035.0-20220301	3/1/22	1045	JB	GW	2		x								x	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		3/1/22 1130	2	3	3/2/22 14:14	4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
			6	7		8 3/2/22 1444

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220301 Rev 031318

FA93545

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 3 OF 4

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	CONTAINER INFORMATION: NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
25	S014-DPT1006-045.0-20220301	3/1/22	1112	JB	GW	2		X								X	
26	S014-DPT1007-005.0-20220301	3/1/22	1248	JB	GW	2		X								X	
27	S014-DPT1007-015.0-20220301	3/1/22	1301	JB	GW	2		X								X	
28	S014-DPT1007-025.0-20220301	3/1/22	1315	JB	GW	2		X								X	
29	S014-FD-20220301-01	3/1/22	1315	JB	GW	2		X								X	
30	S014-DPT1007-035.0-20220301	3/1/22	1343	JB	GW	2		X								X	
31	S014-DPT1007-045.0-20220301	3/1/22	1412	JB	GW	2		X								X	
32	S014-DPT1008-007.0-20220301	3/1/22	1500	JB	GW	2		X								X	
33	S014-DPT1008-015.0-20220301	3/1/22	1511	JB	GW	2		X								X	
34	S014-DPT1008-025.0-20220301	3/1/22	1528	JB	GW	2		X								X	
35	S014-DPT1008-035.0-20220301	3/1/22	1548	JB	GW	2		X								X	
36	S014-DPT1008-045.0-20220301	3/1/22	1611	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

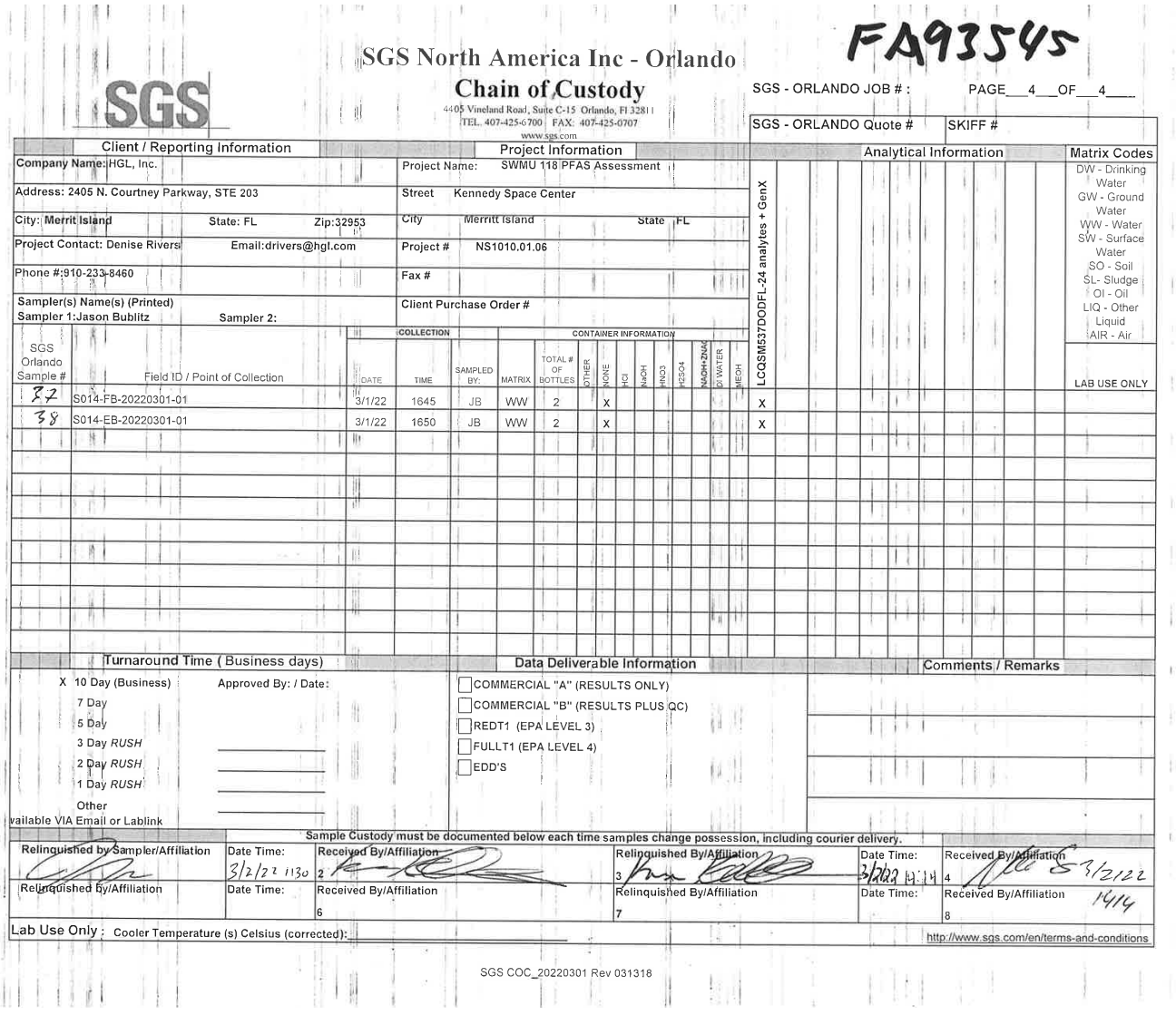
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	3/2/22 1130	2	3	3/2/22 14:14	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 3/3/22 1440

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220301 Rev 031318

FA93545: Chain of Custody
Page 3 of 5



FA93545

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 4 OF 4

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
37	S014-FB-20220301-01	3/1/22	1645	JB	WW	2		X								X	
38	S014-EB-20220301-01	3/1/22	1650	JB	WW	2		X								X	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	3/2/22 1130	2	3	3/2/22 14:14	4 3/2/22
Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 14/14

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220301 Rev 031318

SGS Sample Receipt Summary

Job Number: FA93545 **Client:** HGL **Project:** SMWU 014 PFAS ASSESSMENT

Date / Time Received: 3/2/2022 2:14:00 PM **Delivery Method:** DO **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.4);

Cooler Temps (Corrected) °C: Cooler 1: (4.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/2/2022 2:14:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90088	EPA 537M QSM5.3 B-15						
OP90088-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP90088-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	91	%	72-129
OP90088-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP90088-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	91	%	72-130
OP90088-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	91	%	71-133
OP90088-BS	375-95-1	Perfluorononanoic acid	BSP	REC	94	%	69-130
OP90088-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	83	%	71-129
OP90088-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	87	%	69-133
OP90088-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	96	%	72-134
OP90088-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	94	%	65-144
OP90088-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	91	%	71-132
OP90088-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	91	%	73-130
OP90088-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	91	%	71-127
OP90088-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	94	%	68-131
OP90088-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP90088-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	91	%	65-140
OP90088-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	93	%	69-127
OP90088-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	79	%	53-142
OP90088-BS	754-91-6	PFOSA	BSP	REC	89	%	67-137
OP90088-BS	2355-31-9	MeFOSAA	BSP	REC	93	%	65-136
OP90088-BS	2991-50-6	EtFOSAA	BSP	REC	95	%	61-135
OP90088-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	91	%	63-143
OP90088-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	93	%	64-140
OP90088-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	89	%	67-138
OP90088-MS	375-22-4	Perfluorobutanoic acid	MS	REC	84	%	73-129
OP90088-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	87	%	72-129
OP90088-MS	307-24-4	Perfluorohexanoic acid	MS	REC	84	%	72-129
OP90088-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	88	%	72-130
OP90088-MS	335-67-1	Perfluorooctanoic acid	MS	REC	88	%	71-133
OP90088-MS	375-95-1	Perfluorononanoic acid	MS	REC	90	%	69-130
OP90088-MS	335-76-2	Perfluorodecanoic acid	MS	REC	79	%	71-129
OP90088-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	84	%	69-133
OP90088-MS	307-55-1	Perfluorododecanoic acid	MS	REC	93	%	72-134
OP90088-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	105	%	65-144
OP90088-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	90	%	71-132
OP90088-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	87	%	73-130
OP90088-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	102	%	71-127
OP90088-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	93	%	68-131
OP90088-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	91	%	69-134
OP90088-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	84	%	65-140
OP90088-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	87	%	69-127
OP90088-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	74	%	53-142

* Sample used for QC is not from job FA93545

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90088-MS	754-91-6	PFOSA	MS	REC	88	%	67-137
OP90088-MS	2355-31-9	MeFOSAA	MS	REC	91	%	65-136
OP90088-MS	2991-50-6	EtFOSAA	MS	REC	91	%	61-135
OP90088-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	86	%	63-143
OP90088-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	87	%	64-140
OP90088-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	87	%	67-138
OP90088-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90088-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	2	%	30
OP90088-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	1	%	30
OP90088-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	4	%	30
OP90088-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	3	%	30
OP90088-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90088-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	5	%	30
OP90088-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90088-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90088-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90088-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90088-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90088-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90088-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	1	%	30
OP90088-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90088-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	3	%	30
OP90088-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90088-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90088-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90088-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90088-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90088-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90088-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90088-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90089	EPA 537M QSM5.3 B-15						
OP90089-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	83	%	73-129
OP90089-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	88	%	72-129
OP90089-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	86	%	72-129
OP90089-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	88	%	72-130
OP90089-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	87	%	71-133
OP90089-BS	375-95-1	Perfluorononanoic acid	BSP	REC	92	%	69-130
OP90089-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	79	%	71-129
OP90089-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	84	%	69-133
OP90089-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	92	%	72-134
OP90089-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	91	%	65-144
OP90089-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP90089-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	89	%	73-130

* Sample used for QC is not from job FA93545

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90089-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP90089-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	91	%	68-131
OP90089-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	95	%	69-134
OP90089-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	86	%	65-140
OP90089-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	89	%	69-127
OP90089-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	73	%	53-142
OP90089-BS	754-91-6	PFOSA	BSP	REC	86	%	67-137
OP90089-BS	2355-31-9	MeFOSAA	BSP	REC	88	%	65-136
OP90089-BS	2991-50-6	EtFOSAA	BSP	REC	91	%	61-135
OP90089-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	86	%	63-143
OP90089-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	91	%	64-140
OP90089-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	86	%	67-138
OP90089-MS	375-22-4	Perfluorobutanoic acid	MS	REC	85	%	73-129
OP90089-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	88	%	72-129
OP90089-MS	307-24-4	Perfluorohexanoic acid	MS	REC	85	%	72-129
OP90089-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	89	%	72-130
OP90089-MS	335-67-1	Perfluorooctanoic acid	MS	REC	89	%	71-133
OP90089-MS	375-95-1	Perfluorononanoic acid	MS	REC	94	%	69-130
OP90089-MS	335-76-2	Perfluorodecanoic acid	MS	REC	81	%	71-129
OP90089-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	85	%	69-133
OP90089-MS	307-55-1	Perfluorododecanoic acid	MS	REC	94	%	72-134
OP90089-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	104	%	65-144
OP90089-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	95	%	71-132
OP90089-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	89	%	73-130
OP90089-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	92	%	71-127
OP90089-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	91	%	68-131
OP90089-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	94	%	69-134
OP90089-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	85	%	65-140
OP90089-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	86	%	69-127
OP90089-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	71	%	53-142
OP90089-MS	754-91-6	PFOSA	MS	REC	87	%	67-137
OP90089-MS	2355-31-9	MeFOSAA	MS	REC	91	%	65-136
OP90089-MS	2991-50-6	EtFOSAA	MS	REC	95	%	61-135
OP90089-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	88	%	63-143
OP90089-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	90	%	64-140
OP90089-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	88	%	67-138
OP90089-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	5	%	30
OP90089-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	11	%	30
OP90089-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	4	%	30
OP90089-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90089-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90089-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90089-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90089-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90089-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93545

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93545
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/28/22 thru 03/01/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90089-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90089-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90089-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90089-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90089-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	4	%	30
OP90089-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90089-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	2	%	30
OP90089-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90089-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90089-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90089-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90089-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90089-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90089-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90089-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93545

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q778-IBLK	3Q56551.D	1	03/17/22	JB	n/a	n/a	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-16, FA93545-18, FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	96%	50-150%

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q778-IBLK	3Q56551.D	1	03/17/22	JB	n/a	n/a	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-16, FA93545-18, FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSA	94%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	109%	50-150%
	13C3-HFPO-DA	97%	50-150%

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q780-IBLK	3Q56730.D	1	03/21/22	MV	n/a	n/a	S3Q780

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-6, FA93545-8, FA93545-18, FA93545-19, FA93545-20, FA93545-21, FA93545-29, FA93545-30, FA93545-33, FA93545-36

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	101%	50-150%

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q780-IBLK	3Q56730.D	1	03/21/22	MV	n/a	n/a	S3Q780

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-6, FA93545-8, FA93545-18, FA93545-19, FA93545-20, FA93545-21, FA93545-29, FA93545-30, FA93545-33, FA93545-36

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	104%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	95%	50-150%

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q781-IBLK	3Q56839.D	1	03/23/22	MV	n/a	n/a	S3Q781

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	90%	50-150%

Instrument Blank

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q781-IBLK	3Q56839.D	1	03/23/22	MV	n/a	n/a	S3Q781

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-17

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	97%	50-150%
	d3-MeFOSA	92%	50-150%
	d3-MeFOSAA	106%	50-150%
	d5-EtFOSAA	109%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	83%	50-150%

Method Blank Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-MB	3Q56581.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	76%	50-150%
	13C5-PFPeA	80%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	95%	50-150%

Method Blank Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-MB	3Q56581.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	74%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	84%	50-150%

Method Blank Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-MB	3Q56612.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	79%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	90%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	94%	50-150%

Method Blank Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-MB	3Q56612.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	85%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	87%	50-150%

Blank Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-BS	3Q56580.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.137	86	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.145	91	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.141	88	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.145	91	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.146	91	71-133
375-95-1	Perfluorononanoic acid	0.16	0.151	94	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.132	83	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.139	87	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.153	96	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.151	94	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.146	91	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.146	91	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.146	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.151	94	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.156	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.146	91	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.149	93	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.126	79	53-142
754-91-6	PFOSA	0.16	0.143	89	67-137
2355-31-9	MeFOSAA	0.16	0.148	93	65-136
2991-50-6	EtFOSAA	0.16	0.152	95	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.145	91	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.148	93	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.143	89	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.145	91	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	78%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-BS	3Q56580.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	84%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	85%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	87%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-BS	3Q56611.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.133	83	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.140	88	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.138	86	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.140	88	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.139	87	71-133
375-95-1	Perfluorononanoic acid	0.16	0.147	92	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.126	79	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.135	84	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.147	92	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.145	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.141	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.142	89	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.141	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.145	91	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.152	95	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.138	86	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.143	89	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.117	73	53-142
754-91-6	PFOSA	0.16	0.138	86	67-137
2355-31-9	MeFOSAA	0.16	0.140	88	65-136
2991-50-6	EtFOSAA	0.16	0.146	91	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.138	86	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.146	91	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.137	86	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.134	84	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	83%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	99%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-BS	3Q56611.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	93%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-MS	3Q56583.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778
FA93545-1	3Q56788.D	1	03/22/22	MV	03/04/22	OP90088	S3Q780
FA93545-1 [a]	3Q56907.D	5	03/24/22	MV	03/04/22	OP90088	S3Q781

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	Compound	FA93545-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.080 U [b]		0.16	0.135	84	73-129
2706-90-3	Perfluoropentanoic acid	0.040 U [b]		0.16	0.139	87	72-129
307-24-4	Perfluorohexanoic acid	0.0080 U		0.16	0.134	84	72-129
375-85-9	Perfluoroheptanoic acid	0.0080 U		0.16	0.140	88	72-130
335-67-1	Perfluorooctanoic acid	0.0080 U		0.16	0.140	88	71-133
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.144	90	69-130
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.127	79	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.134	84	69-133
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.149	93	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.168	105	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.144	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		0.16	0.139	87	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		0.16	0.163	102	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		0.16	0.148	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		0.16	0.145	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		0.16	0.134	84	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.139	87	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.118	74	53-142
754-91-6	PFOSA	0.0080 U		0.16	0.140	88	67-137
2355-31-9	MeFOSAA	0.016 U		0.16	0.145	91	65-136
2991-50-6	EtFOSAA	0.016 U		0.16	0.146	91	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.137	86	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.16	0.139	87	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.139	87	67-138
13252-13-6	HFPO-DA (GenX)	0.016 U		0.16	0.150	94	60-140

CAS No.	ID Standard Recoveries	MS	FA93545-1	FA93545-1	Limits
	13C4-PFBA	51%	48%* [c]	87%	50-150%
	13C5-PFPeA	53%	48%* [c]	88%	50-150%
	13C5-PFHxA	68%	56%	92%	50-150%
	13C4-PFHpA	79%	65%	97%	50-150%
	13C8-PFOA	92%	71%	102%	50-150%
	13C9-PFNA	99%	73%	102%	50-150%
	13C6-PFDA	103%	73%	97%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-MS	3Q56583.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778
FA93545-1	3Q56788.D	1	03/22/22	MV	03/04/22	OP90088	S3Q780
FA93545-1 [a]	3Q56907.D	5	03/24/22	MV	03/04/22	OP90088	S3Q781

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	ID Standard Recoveries	MS	FA93545-1	FA93545-1	Limits
	13C7-PFUnDA	101%	72%	95%	50-150%
	13C2-PFDoDA	86%	68%	90%	50-150%
	13C2-PFTeDA	66%	58%	76%	50-150%
	13C3-PFBS	63%	52%	91%	50-150%
	13C3-PFHxS	87%	66%	99%	50-150%
	13C8-PFOS	95%	73%	99%	50-150%
	13C8-FOSA	82%	51%	74%	50-150%
	d3-MeFOSAA	112%	83%	123%	50-150%
	d5-EtFOSAA	107%	87%	126%	50-150%
	13C2-4:2FTS	81%	64%	104%	50-150%
	13C2-6:2FTS	113%	82%	115%	50-150%
	13C2-8:2FTS	104%	77%	106%	50-150%
	13C3-HFPO-DA		52%	80%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-MS	3Q56614.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778
FA93545-23	3Q56613.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	Compound	FA93545-23 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.017	U	0.167	0.141	85	73-129
2706-90-3	Perfluoropentanoic acid	0.0025	J	0.167	0.149	88	72-129
307-24-4	Perfluorohexanoic acid	0.0026	J	0.167	0.145	85	72-129
375-85-9	Perfluoroheptanoic acid	0.0083	U	0.167	0.148	89	72-130
335-67-1	Perfluorooctanoic acid	0.0064	J	0.167	0.154	89	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.156	94	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.135	81	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.141	85	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.156	94	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.173	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.158	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.167	0.149	89	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.167	0.154	92	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0124		0.167	0.164	91	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.167	0.156	94	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0400		0.167	0.181	85	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.143	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.119	71	53-142
754-91-6	PFOSA	0.0024	J	0.167	0.147	87	67-137
2355-31-9	MeFOSAA	0.017	U	0.167	0.152	91	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.159	95	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.146	88	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.150	90	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.147	88	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.151	91	60-140

CAS No.	ID Standard Recoveries	MS	FA93545-23	Limits
	13C4-PFBA	65%	66%	50-150%
	13C5-PFPeA	68%	69%	50-150%
	13C5-PFHxA	74%	76%	50-150%
	13C4-PFHpA	78%	80%	50-150%
	13C8-PFOA	85%	87%	50-150%
	13C9-PFNA	85%	88%	50-150%
	13C6-PFDA	90%	87%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-MS	3Q56614.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778
FA93545-23	3Q56613.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	ID Standard Recoveries	MS	FA93545-23	Limits
	13C7-PFUnDA	90%	83%	50-150%
	13C2-PFDoDA	78%	72%	50-150%
	13C2-PFTeDA	63%	56%	50-150%
	13C3-PFBS	71%	72%	50-150%
	13C3-PFHxS	81%	82%	50-150%
	13C8-PFOS	83%	80%	50-150%
	13C8-FOSA	86%	84%	50-150%
	d3-MeFOSAA	99%	97%	50-150%
	d5-EtFOSAA	90%	86%	50-150%
	13C2-4:2FTS	81%	81%	50-150%
	13C2-6:2FTS	94%	97%	50-150%
	13C2-8:2FTS	84%	83%	50-150%
	13C3-HFPO-DA	77%	79%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-DUP	3Q56585.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778
FA93545-9	3Q56584.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	Compound	FA93545-9 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0108	J	0.0108	J	0	30
2706-90-3	Perfluoropentanoic acid	0.0127		0.0125		2	30
307-24-4	Perfluorohexanoic acid	0.0082		0.0081		1	30
375-85-9	Perfluoroheptanoic acid	0.0076	J	0.0073	J	4	30
335-67-1	Perfluorooctanoic acid	0.0067	J	0.0065	J	3	30
375-95-1	Perfluorononanoic acid	0.0025	J	0.0025	J	0	30
335-76-2	Perfluorodecanoic acid	0.0022	J	0.0021	J	5	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0248		0.0250		1	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0793		0.0770		3	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93545-9	Limits
	13C4-PFBA	75%	70%	50-150%
	13C5-PFPeA	77%	73%	50-150%
	13C5-PFHxA	82%	78%	50-150%
	13C4-PFHpA	85%	81%	50-150%
	13C8-PFOA	90%	84%	50-150%
	13C9-PFNA	87%	83%	50-150%
	13C6-PFDA	83%	79%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90088-DUP	3Q56585.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778
FA93545-9	3Q56584.D	1	03/17/22	JB	03/04/22	OP90088	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-1, FA93545-2, FA93545-3, FA93545-4, FA93545-5, FA93545-6, FA93545-7, FA93545-8, FA93545-9, FA93545-10, FA93545-11, FA93545-12, FA93545-13, FA93545-14, FA93545-15, FA93545-16, FA93545-17, FA93545-18, FA93545-19, FA93545-20

CAS No.	ID Standard Recoveries	DUP	FA93545-9	Limits
	13C7-PFUnDA	77%	72%	50-150%
	13C2-PFDoDA	63%	61%	50-150%
	13C2-PFTeDA	56%	62%	50-150%
	13C3-PFBS	80%	76%	50-150%
	13C3-PFHxS	83%	79%	50-150%
	13C8-PFOS	80%	74%	50-150%
	13C8-FOSA	83%	82%	50-150%
	d3-MeFOSAA	89%	85%	50-150%
	d5-EtFOSAA	77%	72%	50-150%
	13C2-4:2FTS	90%	85%	50-150%
	13C2-6:2FTS	101%	98%	50-150%
	13C2-8:2FTS	78%	82%	50-150%
	13C3-HFPO-DA	82%	77%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-DUP	3Q56616.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778
FA93545-34	3Q56615.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	Compound	FA93545-34 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0071	J	0.0075	J	5	30
2706-90-3	Perfluoropentanoic acid	0.0027	J	0.0030	J	11	30
307-24-4	Perfluorohexanoic acid	0.0023	J	0.0022	J	4	30
375-85-9	Perfluoroheptanoic acid	0.0083	U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0034	J	0.0034	J	0	30
375-95-1	Perfluorononanoic acid	0.0083	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0083	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0044	J	0.0046	J	4	30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0189		0.0193		2	30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	ND		nc	30
754-91-6	PFOSA	0.0083	U	ND		nc	30
2355-31-9	MeFOSAA	0.017	U	ND		nc	30
2991-50-6	EtFOSAA	0.017	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93545-34	Limits
	13C4-PFBA	49%* [a]	49%* [a]	50-150%
	13C5-PFPeA	47%* [a]	48%* [a]	50-150%
	13C5-PFHxA	58%	58%	50-150%
	13C4-PFHpA	69%	67%	50-150%
	13C8-PFOA	85%	78%	50-150%
	13C9-PFNA	92%	86%	50-150%
	13C6-PFDA	98%	95%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93545
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90089-DUP	3Q56616.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778
FA93545-34	3Q56615.D	1	03/18/22	JB	03/04/22	OP90089	S3Q778

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93545-21, FA93545-22, FA93545-23, FA93545-24, FA93545-25, FA93545-26, FA93545-27, FA93545-28, FA93545-29, FA93545-30, FA93545-31, FA93545-32, FA93545-33, FA93545-34, FA93545-35, FA93545-36, FA93545-37, FA93545-38

CAS No.	ID Standard Recoveries	DUP	FA93545-34	Limits
	13C7-PFUnDA	96%	92%	50-150%
	13C2-PFDoDA	84%	80%	50-150%
	13C2-PFTeDA	72%	71%	50-150%
	13C3-PFBS	56%	56%	50-150%
	13C3-PFHxS	75%	72%	50-150%
	13C8-PFOS	86%	81%	50-150%
	13C8-FOSA	80%	76%	50-150%
	d3-MeFOSAA	114%	107%	50-150%
	d5-EtFOSAA	104%	98%	50-150%
	13C2-4:2FTS	67%	66%	50-150%
	13C2-6:2FTS	102%	96%	50-150%
	13C2-8:2FTS	95%	93%	50-150%
	13C3-HFPO-DA	61%	59%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

S014 NS1010.01.06

SGS Job Number: FA93649

Sampling Dates: 03/02/22 - 03/03/22



Report to:

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Total number of pages in report: **115**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA93649

NASA TQN 21- SLF PFAS Assessment
Project No: S014 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93649-1	03/02/22	08:42	RL	03/04/22	AQ	Ground Water	S014-DPT1009-005.0-20220302
FA93649-2	03/02/22	08:58	RL	03/04/22	AQ	Ground Water	S014-DPT1009-015.0-20220302
FA93649-3	03/02/22	09:13	RL	03/04/22	AQ	Ground Water	S014-DPT1009-025.0-20220302
FA93649-4	03/02/22	09:36	RL	03/04/22	AQ	Ground Water	S014-DPT1009-035.0-20220302
FA93649-5	03/02/22	10:05	RL	03/04/22	AQ	Ground Water	S014-DPT1009-045.0-20220302
FA93649-6	03/02/22	10:05	RL	03/04/22	AQ	Ground Water	S014-FD-20220302-01
FA93649-7	03/02/22	10:48	RL	03/04/22	AQ	Ground Water	S014-DPT1010-005.0-20220302
FA93649-8	03/02/22	11:01	RL	03/04/22	AQ	Ground Water	S014-DPT1010-015.0-20220302
FA93649-9	03/02/22	11:21	RL	03/04/22	AQ	Ground Water	S014-DPT1010-025.0-20220302
FA93649-10	03/02/22	14:30	RL	03/04/22	AQ	Ground Water	S014-DPT1010-035.0-20220302
FA93649-11	03/02/22	14:49	RL	03/04/22	AQ	Ground Water	S014-DPT1010-045.0-20220302
FA93649-12	03/02/22	15:14	RL	03/04/22	AQ	Ground Water	S014-DPT1011-005.0-20220302
FA93649-13	03/02/22	15:26	RL	03/04/22	AQ	Ground Water	S014-DPT1011-015.0-20220302

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93649

NASA TQN 21- SLF PFAS Assessment
Project No: S014 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93649-14	03/02/22	15:39	RL	03/04/22	AQ	Ground Water	S014-DPT1011-025.0-20220302
FA93649-15	03/02/22	15:53	RL	03/04/22	AQ	Ground Water	S014-DPT1011-035.0-20220302
FA93649-16	03/02/22	16:13	RL	03/04/22	AQ	Ground Water	S014-DPT1011-045.0-20220302
FA93649-17	03/02/22	16:13	RL	03/04/22	AQ	Ground Water	S014-FD-20220302-02
FA93649-18	03/02/22	16:41	RL	03/04/22	AQ	Field Blank Water	S014-FB-20220302-01
FA93649-19	03/02/22	16:45	RL	03/04/22	AQ	Equipment Blank	S014-EB-20220302-01
FA93649-20	03/03/22	08:31	RL	03/04/22	AQ	Ground Water	S014-DPT1012-005.0-20220303
FA93649-21	03/03/22	08:44	RL	03/04/22	AQ	Ground Water	S014-DPT1012-015.0-20220303
FA93649-22	03/03/22	08:57	RL	03/04/22	AQ	Ground Water	S014-DPT1012-025.0-20220303
FA93649-23	03/03/22	09:16	RL	03/04/22	AQ	Ground Water	S014-DPT1012-035.0-20220303
FA93649-24	03/03/22	09:45	RL	03/04/22	AQ	Ground Water	S014-DPT1012-045.0-20220303
FA93649-25	03/03/22	10:28	RL	03/04/22	AQ	Ground Water	S014-DPT1013-005.0-20220303
FA93649-26	03/03/22	10:40	RL	03/04/22	AQ	Ground Water	S014-DPT1013-015.0-20220303

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93649

NASA TQN 21- SLF PFAS Assessment
Project No: S014 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93649-27	03/03/22	10:40	RL	03/04/22	AQ	Ground Water	S014-FD-20220303-01
FA93649-28	03/03/22	10:56	RL	03/04/22	AQ	Ground Water	S014-DPT1013-025.0-20220303
FA93649-29	03/03/22	11:12	RL	03/04/22	AQ	Ground Water	S014-DPT1013-035.0-20220303
FA93649-30	03/03/22	11:36	RL	03/04/22	AQ	Ground Water	S014-DPT1013-045.0-20220303
FA93649-31	03/03/22	12:00	RL	03/04/22	AQ	Field Blank Water	S014-FB-20220303-01
FA93649-32	03/03/22	12:03	RL	03/04/22	AQ	Equipment Blank	S014-EB-20220303-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93649

Site: NASA TQN 21- SLF PFAS Assessment **Report Date** 3/28/2022 12:23:50

On 03/04/2022, 30 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93649 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90144

Sample(s) FA93649-21MS, FA93649-22DUP were used as the QC samples indicated.

Matrix: AQ **Batch ID:** OP90369

Sample(s) FA93617-1MS, FA93617-1MSD were used as the QC samples indicated.

Sample(s) FA93649-1, FA93649-12, FA93649-13, FA93649-15, FA93649-8, FA93649-9 have surrogates outside control

FA93649-1 for 13C3-PFBS: Outside control limits.

FA93649-1 for 13C4-PFBA: Outside control limits.

FA93649-1 for 13C5-PFHxA: Outside control limits.

FA93649-1 for 13C5-PFPeA: Outside control limits.

FA93649-1 for 13C8-FOSA: Outside control limits.

FA93649-1: Dilution required due to matrix interference (ID recovery standard failure).

FA93649-7: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA93649-8 for 13C2-PFTeDA: Outside control limits.

FA93649-8: Dilution required due to matrix interference (ID recovery standard failure).

FA93649-9 for 13C3-HFPO-DA: Outside control limits.

FA93649-9 for 13C4-PFBA: Outside control limits.

FA93649-9 for 13C5-PFPeA: Outside control limits.

FA93649-9: Dilution required due to matrix interference (ID recovery standard failure).

FA93649-12 for PFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93649-12: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA93649-12: Dilution required due to matrix interference (ID recovery standard failure).

FA93649-13 for 13C2-6:2FTS: Outside control limits.

FA93649-13 for 13C2-8:2FTS: Outside control limits.

FA93649-13 for 13C8-FOSA: Outside control limits.

FA93649-15 for 13C2-6:2FTS: Outside control limits.

FA93649-15 for 13C2-6:2FTS: Outside control limits.

FA93649-15 for 13C8-FOSA: Outside control limits.

FA93649-15 for 13C8-PFOS: Outside control limits.

FA93649-15 for 13C9-PFNA: Outside control limits.

Matrix: AQ **Batch ID:** OP90395

OP90395-BS: Insufficient sample for MS/MSD.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93649-1	**S014-DPT1009-005.0-20220302**					
Perfluorobutanoic acid [a]		0.0426 J	0.091	0.045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0298 J	0.045	0.023	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0306 J	0.045	0.023	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0107	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0114	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0147 J	0.045	0.023	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0165 J	0.045	0.023	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.151	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0071 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.267	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0204	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
FA93649-2	**S014-DPT1009-015.0-20220302**					
Perfluorobutanoic acid		0.0981	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.295	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.404	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.122	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.190	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0066 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.160	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.221	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		2.54	0.45	0.23	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.172	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		9.29	0.45	0.23	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0107	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0113 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.436	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0047 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
FA93649-3	**S014-DPT1009-025.0-20220302**					
Perfluorobutanoic acid		0.0063 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0106	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0464	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0060 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0208	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0320	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0458	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.463	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0125	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0506	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93649-4	**S014-DPT1009-035.0-20220302**					
Perfluorobutanoic acid		0.0448	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0617	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.183	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0245	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0183	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.255	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.208	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.376	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0698	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93649-5	**S014-DPT1009-045.0-20220302**					
Perfluorobutanoic acid		0.201	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.304	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.915	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.151	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.239	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		1.09	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		1.02	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		3.48	0.17	0.083	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.225	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.685	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.010 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0204	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93649-6	**S014-FD-20220302-01**					
Perfluorobutanoic acid		0.203	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.317	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.951	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.156	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.246	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		1.12	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		1.02	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		3.54	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.229	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.770	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0105 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0221	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93649-7	**S014-DPT1010-005.0-20220302**					
No hits reported in this sample.						
FA93649-8	**S014-DPT1010-015.0-20220302**					
Perfluorobutanoic acid		0.0115 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
FA93649-9	**S014-DPT1010-025.0-20220302**					
Perfluorohexanoic acid		0.0027 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0028 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0097	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0274	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FA93649-10	**S014-DPT1010-035.0-20220302**					
Perfluoropentanoic acid		0.0047 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0043 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0048 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0141	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0118	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93649-11	**S014-DPT1010-045.0-20220302**					
Perfluorohexanesulfonic acid		0.0037 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FA93649-12	**S014-DPT1011-005.0-20220302**					
Perfluorobutanoic acid [b]		0.0054 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0138	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [b]		0.0318	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FA93649-13	**S014-DPT1011-015.0-20220302**					
Perfluorobutanoic acid		0.193	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.630	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.589	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.448	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.502	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0657	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0087	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.140	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.207	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
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Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		3.33	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.183	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		8.19	0.17	0.087	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0273	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0676	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		2.16	1.7	0.87	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		1.81	1.7	0.87	ug/l	EPA 537M QSM5.3 B-15
FA93649-14	**S014-DPT1011-025.0-20220302**					
Perfluorobutanoic acid		0.150	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.555	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.455	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.301	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.201	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0072 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0985	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.131	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		1.41	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0749	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		5.62	0.16	0.080	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0776	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		1.04	0.32	0.16	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0076 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93649-15	**S014-DPT1011-035.0-20220302**					
Perfluorobutanoic acid		0.521	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		1.98	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		1.72	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		1.33	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		1.50	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0536 J	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.224	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.315	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		3.60	0.087	0.043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.319	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		28.9	0.87	0.43	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.494	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		19.1	1.7	0.87	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0673	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
FA93649-16	**S014-DPT1011-045.0-20220302**					
Perfluorobutanoic acid		0.0083 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanoic acid		0.0234	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0236	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0131	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0151	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0162	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0126	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0711	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0048 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.494	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0060 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.150	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0085 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93649-17	**S014-FD-20220302-02**					
Perfluorobutanoic acid		0.0186	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0353	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0307	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0210	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0229	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0123	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0109	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroundecanoic acid		0.0130	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorododecanoic acid		0.0141	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorotridecanoic acid		0.0144	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorotetradecanoic acid		0.0118	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0171	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0130	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0619	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0035 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.358	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
4:2 Fluorotelomer sulfonate		0.0055 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.122	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0045 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15

FA93649-18 **S014-FB-20220302-01**

No hits reported in this sample.

FA93649-19 **S014-EB-20220302-01**

No hits reported in this sample.

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93649-20	**S014-DPT1012-005.0-20220303**					
Perfluorobutanoic acid		0.0241 J	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
FA93649-21	**S014-DPT1012-015.0-20220303**					
Perfluorobutanoic acid		0.0048 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0031 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0198	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93649-22	**S014-DPT1012-025.0-20220303**					
Perfluorobutanoic acid		0.0055 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0050 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0033 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0099	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0063 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0315	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93649-23	**S014-DPT1012-035.0-20220303**					
Perfluoropentanoic acid		0.0058 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0044 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0027 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0071 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0086	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0114	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93649-24	**S014-DPT1012-045.0-20220303**					
No hits reported in this sample.						
FA93649-25	**S014-DPT1013-005.0-20220303**					
Perfluorobutanoic acid		0.0045 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0571	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0332	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0631	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.124	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93649-26	**S014-DPT1013-015.0-20220303**					
Perfluorobutanoic acid		0.0079 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0115	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0126	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0446	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0362	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.117	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.118	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93649-27	**S014-FD-20220303-01**					
Perfluorobutanoic acid		0.0080 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0114	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0125	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0451	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0355	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.121	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0042 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.120	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93649-28	**S014-DPT1013-025.0-20220303**					
Perfluorobutanoic acid		0.0126 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0116	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0112	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0064 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0118	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0042 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0500	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0572	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanesulfonic acid		0.0045 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0036 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
EtFOSAA		0.0176	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93649-29	**S014-DPT1013-035.0-20220303**					
Perfluorobutanoic acid		0.0176	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanoic acid		0.0243	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0187	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0097	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0134	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0028 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0048 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0060 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0878	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0043 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0915	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0281	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
EtFOSAA		0.0549	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93649-30	**S014-DPT1013-045.0-20220303**					
Perfluorobutanoic acid		0.0049 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0080 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0051 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0036 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0063 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0125	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0327	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93649-31	**S014-FB-20220303-01**					
No hits reported in this sample.						
FA93649-32	**S014-EB-20220303-01**					
No hits reported in this sample.						

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-DPT1009-005.0-20220302
Lab Sample ID: FA93649-1 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87589.D	1	03/23/22 13:52	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2 [a]	2Q87666.D	5	03/24/22 11:23	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0426 [b]	0.091	0.045	0.023	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0298 [b]	0.045	0.023	0.011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0306 [b]	0.045	0.023	0.011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0107	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0114	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0147 [b]	0.045	0.023	0.011	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0165 [b]	0.045	0.023	0.011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.151	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0071	0.0091	0.0045	0.0023	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.267	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.023 U [b]	0.045	0.023	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0204	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1009-005.0-20220302		
Lab Sample ID:	FA93649-1	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [c]	79%	50-150%
	13C5-PFPeA	46% [c]	78%	50-150%
	13C5-PFHxA	49% [c]	80%	50-150%
	13C4-PFHpA	60%	92%	50-150%
	13C8-PFOA	68%	95%	50-150%
	13C9-PFNA	74%	97%	50-150%
	13C6-PFDA	84%	107%	50-150%
	13C7-PFUnDA	81%	104%	50-150%
	13C2-PFDoDA	72%	94%	50-150%
	13C2-PFTeDA	56%	71%	50-150%
	13C3-PFBS	49% [c]	82%	50-150%
	13C3-PFHxS	63%	93%	50-150%
	13C8-PFOS	70%	94%	50-150%
	13C8-FOSA	46% [c]	64%	50-150%
	d3-MeFOSAA	82%	112%	50-150%
	d5-EtFOSAA	81%	113%	50-150%
	13C2-4:2FTS	50%	83%	50-150%
	13C2-6:2FTS	75%	102%	50-150%
	13C2-8:2FTS	81%	102%	50-150%
	13C3-HFPO-DA	51%	82%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1009-015.0-20220302
Lab Sample ID: FA93649-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87592.D	1	03/23/22 14:42	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87593.D	50	03/23/22 14:59	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0981	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.295	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.404	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.122	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.190	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0066	0.0091	0.0045	0.0023	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.160	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.221	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	2.54 [a]	0.45	0.23	0.11	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.172	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	9.29 [a]	0.45	0.23	0.11	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0107	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0113	0.018	0.0091	0.0045	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.436	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1009-015.0-20220302
Lab Sample ID: FA93649-2 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0047	0.018	0.0091	0.0045	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	83%	50-150%
	13C5-PFPeA	59%	86%	50-150%
	13C5-PFHxA	59%	85%	50-150%
	13C4-PFHpA	67%	93%	50-150%
	13C8-PFOA	74%	91%	50-150%
	13C9-PFNA	65%	90%	50-150%
	13C6-PFDA	89%	100%	50-150%
	13C7-PFUnDA	85%	99%	50-150%
	13C2-PFDoDA	76%	96%	50-150%
	13C2-PFTeDA	79%	97%	50-150%
	13C3-PFBS	61%	83%	50-150%
	13C3-PFHxS	64%	86%	50-150%
	13C8-PFOS	56%	87%	50-150%
	13C8-FOSA	51%	103%	50-150%
	d3-MeFOSAA	88%	105%	50-150%
	d5-EtFOSAA	88%	105%	50-150%
	13C2-4:2FTS	61%	85%	50-150%
	13C2-6:2FTS	90%	92%	50-150%
	13C2-8:2FTS	87%	97%	50-150%
	13C3-HFPO-DA	61%	81%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1009-025.0-20220302
Lab Sample ID: FA93649-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87594.D	1	03/23/22 15:16	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0063	0.018	0.0091	0.0045	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0106	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0464	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0060	0.0091	0.0045	0.0023	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0208	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0320	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0458	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.463	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0125	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0506	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1009-025.0-20220302
Lab Sample ID: FA93649-3 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%		50-150%
	13C5-PFPeA	56%		50-150%
	13C5-PFHxA	56%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	71%		50-150%
	13C9-PFNA	71%		50-150%
	13C6-PFDA	82%		50-150%
	13C7-PFUnDA	77%		50-150%
	13C2-PFDoDA	74%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	57%		50-150%
	13C3-PFHxS	65%		50-150%
	13C8-PFOS	67%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSAA	80%		50-150%
	d5-EtFOSAA	82%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	75%		50-150%
	13C2-8:2FTS	79%		50-150%
	13C3-HFPO-DA	56%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1009-035.0-20220302
Lab Sample ID: FA93649-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87595.D	1	03/23/22 15:32	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0448	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0617	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.183	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0245	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0183	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.255	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.208	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.376	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0698	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1009-035.0-20220302		
Lab Sample ID:	FA93649-4	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	61%		50-150%
	13C4-PFHpA	72%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	76%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	62%		50-150%
	13C3-PFHxS	70%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	72%		50-150%
	d3-MeFOSAA	87%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	62%		50-150%
	13C2-6:2FTS	81%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1009-045.0-20220302		
Lab Sample ID:	FA93649-5	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87596.D	1	03/23/22 15:49	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87597.D	20	03/23/22 16:06	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.201	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.304	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.915 [a]	0.17	0.083	0.042	ug/l	
375-85-9	Perfluoroheptanoic acid	0.151	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.239	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.09 [a]	0.17	0.083	0.042	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	1.02 [a]	0.17	0.083	0.042	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.48 [a]	0.17	0.083	0.042	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.225	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.685	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010	0.017	0.0083	0.0042	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.0204	0.017	0.0083	0.0042	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1009-045.0-20220302		
Lab Sample ID:	FA93649-5	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	81%	50-150%
	13C5-PFPeA	61%	84%	50-150%
	13C5-PFHxA	59%	82%	50-150%
	13C4-PFHpA	65%	89%	50-150%
	13C8-PFOA	73%	88%	50-150%
	13C9-PFNA	71%	85%	50-150%
	13C6-PFDA	88%	94%	50-150%
	13C7-PFUnDA	85%	90%	50-150%
	13C2-PFDoDA	80%	85%	50-150%
	13C2-PFTeDA	79%	85%	50-150%
	13C3-PFBS	62%	82%	50-150%
	13C3-PFHxS	62%	88%	50-150%
	13C8-PFOS	74%	83%	50-150%
	13C8-FOSA	63%	87%	50-150%
	d3-MeFOSAA	85%	97%	50-150%
	d5-EtFOSAA	85%	108%	50-150%
	13C2-4:2FTS	58%	81%	50-150%
	13C2-6:2FTS	78%	94%	50-150%
	13C2-8:2FTS	85%	94%	50-150%
	13C3-HFPO-DA	63%	79%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220302-01
Lab Sample ID: FA93649-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87598.D	1	03/23/22 16:23	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87599.D	20	03/23/22 16:39	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.203	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.317	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.951 [a]	0.17	0.087	0.043	ug/l	
375-85-9	Perfluoroheptanoic acid	0.156	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.246	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.12 [a]	0.17	0.087	0.043	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	1.02 [a]	0.17	0.087	0.043	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.54 [a]	0.17	0.087	0.043	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.229	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.770	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0105	0.017	0.0087	0.0043	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.0221	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220302-01
Lab Sample ID: FA93649-6 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	57%	73%	50-150%
	13C5-PFPeA	56%	74%	50-150%
	13C5-PFHxA	54%	74%	50-150%
	13C4-PFHpA	61%	79%	50-150%
	13C8-PFOA	68%	78%	50-150%
	13C9-PFNA	65%	77%	50-150%
	13C6-PFDA	80%	82%	50-150%
	13C7-PFUnDA	78%	78%	50-150%
	13C2-PFDoDA	73%	74%	50-150%
	13C2-PFTeDA	72%	74%	50-150%
	13C3-PFBS	57%	74%	50-150%
	13C3-PFHxS	57%	78%	50-150%
	13C8-PFOS	63%	85%	50-150%
	13C8-FOSA	54%	69%	50-150%
	d3-MeFOSAA	78%	81%	50-150%
	d5-EtFOSAA	80%	89%	50-150%
	13C2-4:2FTS	54%	72%	50-150%
	13C2-6:2FTS	72%	82%	50-150%
	13C2-8:2FTS	78%	89%	50-150%
	13C3-HFPO-DA	57%	68%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-005.0-20220302
Lab Sample ID: FA93649-7 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q87600.D	1.25	03/23/22 16:56	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-005.0-20220302
Lab Sample ID: FA93649-7 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		50-150%
	13C5-PFPeA	86%		50-150%
	13C5-PFHxA	87%		50-150%
	13C4-PFHpA	96%		50-150%
	13C8-PFOA	95%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	103%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	53%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	91%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	99%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	77%		50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
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E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-015.0-20220302
Lab Sample ID: FA93649-8 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87601.D	1	03/23/22 17:13	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2 [a]	2Q87667.D	5	03/24/22 11:41	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0115	0.017	0.0087	0.0043	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-015.0-20220302
Lab Sample ID: FA93649-8 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	84%	50-150%
	13C5-PFPeA	52%	83%	50-150%
	13C5-PFHxA	53%	82%	50-150%
	13C4-PFHpA	65%	95%	50-150%
	13C8-PFOA	75%	99%	50-150%
	13C9-PFNA	82%	101%	50-150%
	13C6-PFDA	90%	111%	50-150%
	13C7-PFUnDA	87%	106%	50-150%
	13C2-PFDoDA	75%	93%	50-150%
	13C2-PFTeDA	49% [c]	56%	50-150%
	13C3-PFBS	53%	82%	50-150%
	13C3-PFHxS	66%	93%	50-150%
	13C8-PFOS	76%	97%	50-150%
	13C8-FOSA	50%	68%	50-150%
	d3-MeFOSAA	91%	117%	50-150%
	d5-EtFOSAA	90%	115%	50-150%
	13C2-4:2FTS	55%	84%	50-150%
	13C2-6:2FTS	80%	103%	50-150%
	13C2-8:2FTS	89%	108%	50-150%
	13C3-HFPO-DA	50%	80%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-025.0-20220302
Lab Sample ID: FA93649-9 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87604.D	1	03/23/22 18:03	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2 [a]	2Q87668.D	5	03/24/22 11:57	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.043 U [b]	0.087	0.043	0.022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0027	0.0087	0.0043	0.0022	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0028	0.0087	0.0043	0.0022	ug/l	J
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0097	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0274	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1010-025.0-20220302		
Lab Sample ID:	FA93649-9	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.043 U [b]	0.087	0.043	0.022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [c]	104%	50-150%
	13C5-PFPeA	49% [c]	103%	50-150%
	13C5-PFHxA	51%	104%	50-150%
	13C4-PFHpA	63%	124%	50-150%
	13C8-PFOA	72%	131%	50-150%
	13C9-PFNA	77%	134%	50-150%
	13C6-PFDA	85%	149%	50-150%
	13C7-PFUnDA	83%	142%	50-150%
	13C2-PFDoDA	76%	132%	50-150%
	13C2-PFTeDA	74%	130%	50-150%
	13C3-PFBS	51%	107%	50-150%
	13C3-PFHxS	64%	119%	50-150%
	13C8-PFOS	73%	126%	50-150%
	13C8-FOSA	56%	104%	50-150%
	d3-MeFOSAA	87%	154% [c]	50-150%
	d5-EtFOSAA	87%	157% [c]	50-150%
	13C2-4:2FTS	53%	107%	50-150%
	13C2-6:2FTS	78%	137%	50-150%
	13C2-8:2FTS	83%	143%	50-150%
	13C3-HFPO-DA	49% [c]	108%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-035.0-20220302
Lab Sample ID: FA93649-10 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87605.D	1	03/23/22 18:20	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0047	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0043	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0048	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0141	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0118	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1010-035.0-20220302
Lab Sample ID: FA93649-10 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	86%		50-150%
	13C3-PFBS	64%		50-150%
	13C3-PFHxS	75%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	58%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	60%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1010-045.0-20220302		
Lab Sample ID:	FA93649-11	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87606.D	1	03/23/22 18:37	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0037	0.010	0.0050	0.0025	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1010-045.0-20220302		
Lab Sample ID:	FA93649-11	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	72%		50-150%
	13C8-PFOA	74%		50-150%
	13C9-PFNA	75%		50-150%
	13C6-PFDA	81%		50-150%
	13C7-PFUnDA	77%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	62%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	72%		50-150%
	13C8-FOSA	58%		50-150%
	d3-MeFOSAA	79%		50-150%
	d5-EtFOSAA	80%		50-150%
	13C2-4:2FTS	62%		50-150%
	13C2-6:2FTS	78%		50-150%
	13C2-8:2FTS	78%		50-150%
	13C3-HFPO-DA	58%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-005.0-20220302
Lab Sample ID: FA93649-12 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q87607.D	1.25	03/23/22 18:53	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2 [b]	2Q87669.D	6.25	03/24/22 12:21	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0054	0.020	0.010	0.0050	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0138	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0318	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-005.0-20220302
Lab Sample ID: FA93649-12 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%	122%	50-150%
	13C5-PFPeA	83%	122%	50-150%
	13C5-PFHxA	83%	122%	50-150%
	13C4-PFHpA	97%	136%	50-150%
	13C8-PFOA	101%	133%	50-150%
	13C9-PFNA	104%	136%	50-150%
	13C6-PFDA	113%	149%	50-150%
	13C7-PFUnDA	107%	140%	50-150%
	13C2-PFDoDA	98%	125%	50-150%
	13C2-PFTeDA	75%	88%	50-150%
	13C3-PFBS	85%	125%	50-150%
	13C3-PFHxS	96%	129%	50-150%
	13C8-PFOS	99%	131%	50-150%
	13C8-FOSA	26% e	34% e	50-150%
	d3-MeFOSAA	106%	147%	50-150%
	d5-EtFOSAA	106%	149%	50-150%
	13C2-4:2FTS	86%	123%	50-150%
	13C2-6:2FTS	109%	143%	50-150%
	13C2-8:2FTS	109%	149%	50-150%
	13C3-HFPO-DA	74%	114%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1011-015.0-20220302		
Lab Sample ID:	FA93649-13	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87608.D	1	03/23/22 19:10	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87609.D	20	03/23/22 19:27	NG	03/22/22 10:00	OP90369	S2Q1233
Run #3	2Q87670.D	100	03/24/22 12:37	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml
Run #3	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.193	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.630	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.589	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.448	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.502	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0657	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0087	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.140	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.207	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.33 [a]	0.17	0.087	0.043	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.183	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	8.19 [a]	0.17	0.087	0.043	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0273	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.087 U [a]	0.17	0.087	0.043	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-015.0-20220302
Lab Sample ID: FA93649-13 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0676	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	2.16 [b]	1.7	0.87	0.43	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	1.81 [b]	1.7	0.87	0.43	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	69%	84%	86%	50-150%
	13C5-PFPeA	69%	85%	89%	50-150%
	13C5-PFHxA	68%	83%	88%	50-150%
	13C4-PFHpA	73%	89%	94%	50-150%
	13C8-PFOA	75%	90%	93%	50-150%
	13C9-PFNA	68%	88%	94%	50-150%
	13C6-PFDA	88%	94%	105%	50-150%
	13C7-PFUnDA	90%	90%	102%	50-150%
	13C2-PFDoDA	83%	87%	100%	50-150%
	13C2-PFTeDA	83%	86%	100%	50-150%
	13C3-PFBS	69%	81%	86%	50-150%
	13C3-PFHxS	68%	86%	89%	50-150%
	13C8-PFOS	59%	84%	91%	50-150%
	13C8-FOSA	41% [c]	61%	106%	50-150%
	d3-MeFOSAA	92%	102%	114%	50-150%
	d5-EtFOSAA	80%	102%	113%	50-150%
	13C2-4:2FTS	71%	89%	86%	50-150%
	13C2-6:2FTS	142%	181% [c]	96%	50-150%
	13C2-8:2FTS	141%	169% [c]	101%	50-150%
	13C3-HFPO-DA	63%	76%	86%	50-150%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-025.0-20220302
Lab Sample ID: FA93649-14 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87612.D	1	03/23/22 20:17	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87613.D	20	03/23/22 20:34	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.150	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.555	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.455	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.301	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.201	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0072	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0985	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.131	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.41 [a]	0.16	0.080	0.040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0749	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	5.62 [a]	0.16	0.080	0.040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0776	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	1.04 [a]	0.32	0.16	0.080	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-025.0-20220302
Lab Sample ID: FA93649-14 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0076	0.016	0.0080	0.0040	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	78%	50-150%
	13C5-PFPeA	64%	82%	50-150%
	13C5-PFHxA	64%	81%	50-150%
	13C4-PFHpA	71%	86%	50-150%
	13C8-PFOA	74%	85%	50-150%
	13C9-PFNA	70%	87%	50-150%
	13C6-PFDA	90%	91%	50-150%
	13C7-PFUnDA	88%	86%	50-150%
	13C2-PFDoDA	80%	80%	50-150%
	13C2-PFTeDA	78%	81%	50-150%
	13C3-PFBS	64%	80%	50-150%
	13C3-PFHxS	69%	84%	50-150%
	13C8-PFOS	61%	77%	50-150%
	13C8-FOSA	55%	69%	50-150%
	d3-MeFOSAA	92%	95%	50-150%
	d5-EtFOSAA	94%	95%	50-150%
	13C2-4:2FTS	67%	78%	50-150%
	13C2-6:2FTS	119%	136%	50-150%
	13C2-8:2FTS	89%	85%	50-150%
	13C3-HFPO-DA	60%	61%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1011-035.0-20220302		
Lab Sample ID:	FA93649-15	**Date Sampled:**	03/02/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87614.D	1	03/23/22 20:50	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2	2Q87615.D	10	03/23/22 21:07	NG	03/22/22 10:00	OP90369	S2Q1233
Run #3	2Q87671.D	100	03/24/22 12:54	NG	03/22/22 10:00	OP90369	S2Q1233

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml
Run #3	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.521	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	1.98 [a]	0.087	0.043	0.022	ug/l	
307-24-4	Perfluorohexanoic acid	1.72 [a]	0.087	0.043	0.022	ug/l	
375-85-9	Perfluoroheptanoic acid	1.33 [a]	0.087	0.043	0.022	ug/l	
335-67-1	Perfluorooctanoic acid	1.50 [a]	0.087	0.043	0.022	ug/l	
375-95-1	Perfluorononanoic acid	0.0536 [a]	0.087	0.043	0.022	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.224	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.315	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.60 [a]	0.087	0.043	0.022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.319	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	28.9 [b]	0.87	0.43	0.22	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.043 U [a]	0.087	0.043	0.022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.043 U [a]	0.087	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-035.0-20220302
Lab Sample ID: FA93649-15 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.494	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	19.1 [b]	1.7	0.87	0.43	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0673	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	69%	78%	87%	50-150%
	13C5-PFPeA	67%	80%	90%	50-150%
	13C5-PFHxA	66%	79%	89%	50-150%
	13C4-PFHpA	69%	85%	94%	50-150%
	13C8-PFOA	66%	81%	93%	50-150%
	13C9-PFNA	43% [c]	81%	94%	50-150%
	13C6-PFDA	93%	94%	106%	50-150%
	13C7-PFUnDA	91%	89%	103%	50-150%
	13C2-PFDoDA	85%	84%	101%	50-150%
	13C2-PFTeDA	82%	80%	102%	50-150%
	13C3-PFBS	69%	82%	88%	50-150%
	13C3-PFHxS	65%	84%	91%	50-150%
	13C8-PFOS	43% [c]	74%	91%	50-150%
	13C8-FOSA	16% [c]	86%	107%	50-150%
	d3-MeFOSAA	97%	100%	115%	50-150%
	d5-EtFOSAA	94%	103%	115%	50-150%
	13C2-4:2FTS	81%	95%	88%	50-150%
	13C2-6:2FTS	369% [c]	575% [c]	100%	50-150%
	13C2-8:2FTS	93%	91%	101%	50-150%
	13C3-HFPO-DA	65%	71%	87%	50-150%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-045.0-20220302
Lab Sample ID: FA93649-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87672.D	1	03/24/22 13:11	NG	03/22/22 10:00	OP90369	S2Q1233
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0234	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0236	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0131	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0151	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0162	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0126	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0711	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0048	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.494	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0060	0.017	0.0083	0.0042	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.150	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1011-045.0-20220302
Lab Sample ID: FA93649-16 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0085	0.017	0.0083	0.0042	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	74%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	76%		50-150%
	13C8-FOSA	53%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	89%		50-150%
	13C3-HFPO-DA	67%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220302-02
Lab Sample ID: FA93649-17
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87390.D	1	03/20/22 23:54	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0186	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0353	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0307	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0210	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0229	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0123	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0109	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0130	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0141	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0144	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0118	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0171	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0130	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0619	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0035	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.358	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0055	0.017	0.0083	0.0042	ug/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	0.122	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220302-02
Lab Sample ID: FA93649-17 **Date Sampled:** 03/02/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045	0.017	0.0083	0.0042	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	70%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	77%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	71%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	109%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220302-01
Lab Sample ID: FA93649-18
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87391.D	1	03/21/22 00:11	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220302-01
Lab Sample ID: FA93649-18 **Date Sampled:** 03/02/22
Matrix: AQ - Field Blank Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	88%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	93%		50-150%
	13C8-PFOA	90%		50-150%
	13C9-PFNA	89%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	94%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	91%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	91%		50-150%
	13C2-6:2FTS	101%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	112%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220302-01
Lab Sample ID: FA93649-19
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/02/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87392.D	1	03/21/22 00:28	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220302-01
Lab Sample ID: FA93649-19 **Date Sampled:** 03/02/22
Matrix: AQ - Equipment Blank **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	87%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	87%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	76%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSAA	86%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	102%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-005.0-20220303
Lab Sample ID: FA93649-20
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87697.D	1	03/24/22 20:25	NG	03/23/22 09:30	OP90395	S2Q1234
Run #2							

	Initial Volume	Final Volume
Run #1	25.0 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0241	0.080	0.040	0.020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
375-95-1	Perfluorononanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
335-76-2	Perfluorodecanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
307-55-1	Perfluorododecanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.020 U	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.040 U	0.080	0.040	0.020	ug/l	
2991-50-6	EtFOSAA	0.040 U	0.080	0.040	0.020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.040 U	0.080	0.040	0.020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-005.0-20220303
Lab Sample ID: FA93649-20 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.040 U	0.080	0.040	0.020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	68%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	76%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	58%		50-150%
	d3-MeFOSAA	77%		50-150%
	d5-EtFOSAA	81%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	84%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-015.0-20220303
Lab Sample ID: FA93649-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87386.D	1	03/20/22 22:47	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0048	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0031	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0198	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1012-015.0-20220303		
Lab Sample ID:	FA93649-21	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	75%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	78%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	94%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-025.0-20220303
Lab Sample ID: FA93649-22
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87388.D	1	03/20/22 23:21	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0055	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0050	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0033	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0099	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0063	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0315	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-025.0-20220303
Lab Sample ID: FA93649-22 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	94%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-035.0-20220303
Lab Sample ID: FA93649-23
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87396.D	1	03/21/22 01:35	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0058	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0044	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0027	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0071	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0086	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0114	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1012-035.0-20220303		
Lab Sample ID:	FA93649-23	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	68%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	73%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1012-045.0-20220303
Lab Sample ID: FA93649-24 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87397.D	1	03/21/22 01:52	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
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Report of Analysis

Client Sample ID:	S014-DPT1012-045.0-20220303		
Lab Sample ID:	FA93649-24	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-005.0-20220303
Lab Sample ID: FA93649-25 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87698.D	1	03/24/22 20:42	NG	03/23/22 09:30	OP90395	S2Q1234
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0045	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0571	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0332	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0631	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.124	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1013-005.0-20220303		
Lab Sample ID:	FA93649-25	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	71%		50-150%
	13C8-PFOA	75%		50-150%
	13C9-PFNA	79%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	71%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	58%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	104%		50-150%
	13C2-4:2FTS	67%		50-150%
	13C2-6:2FTS	83%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	62%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-015.0-20220303
Lab Sample ID: FA93649-26
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87399.D	1	03/21/22 02:25	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0079	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0115	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0126	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0446	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0362	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.117	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.118	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1013-015.0-20220303		
Lab Sample ID:	FA93649-26	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	70%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220303-01
Lab Sample ID: FA93649-27 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87400.D	1	03/21/22 02:42	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0114	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0125	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0451	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0355	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.121	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.120	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220303-01
Lab Sample ID: FA93649-27 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	77%		50-150%
	13C8-FOSA	78%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	90%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-025.0-20220303
Lab Sample ID: FA93649-28
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87401.D	1	03/21/22 02:59	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0126	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0116	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0112	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0064	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0118	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0500	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0572	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045	0.0083	0.0042	0.0021	ug/l	J
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0036	0.0083	0.0042	0.0021	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0176	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-025.0-20220303
Lab Sample ID: FA93649-28 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	71%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-035.0-20220303
Lab Sample ID: FA93649-29
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87402.D	1	03/21/22 03:15	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0176	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0243	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0187	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0097	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0134	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0028	0.0083	0.0042	0.0021	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0048	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0060	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0878	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0915	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0281	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0549	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-035.0-20220303
Lab Sample ID: FA93649-29 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	92%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1013-045.0-20220303
Lab Sample ID: FA93649-30
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87403.D	1	03/21/22 03:32	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0049	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0080	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0051	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0036	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0063	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0024	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0125	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0327	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1013-045.0-20220303		
Lab Sample ID:	FA93649-30	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	75%		50-150%
	13C6-PFDA	86%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	76%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	73%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220303-01
Lab Sample ID: FA93649-31
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87404.D	1	03/21/22 03:49	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220303-01
Lab Sample ID: FA93649-31 **Date Sampled:** 03/03/22
Matrix: AQ - Field Blank Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	79%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	74%		50-150%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	76%		50-150%
	13C8-FOSA	60%		50-150%
	d3-MeFOSAA	80%		50-150%
	d5-EtFOSAA	88%		50-150%
	13C2-4:2FTS	84%		50-150%
	13C2-6:2FTS	81%		50-150%
	13C2-8:2FTS	89%		50-150%
	13C3-HFPO-DA	101%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220303-01
Lab Sample ID: FA93649-32 **Date Sampled:** 03/03/22
Matrix: AQ - Equipment Blank **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87405.D	1	03/21/22 04:06	JB	03/08/22 07:00	OP90144	S2Q1230
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220303-01
Lab Sample ID: FA93649-32 **Date Sampled:** 03/03/22
Matrix: AQ - Equipment Blank **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	79%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	72%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	76%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	100%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA93649

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 3

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S014-DPT1009-005.0-20220302	3/2/22	0839	RL	GW	2		X								X	
2	S014-DPT1009-015.0-20220302	3/2/22	0858	RL	GW	2		X								X	
3	S014-DPT1009-025.0-20220302	3/2/22	0913	RL	GW	2		X								X	
4	S014-DPT1009-035.0-20220302	3/2/22	0936	RL	GW	2		X								X	
5	S014-DPT1009-045.0-20220302	3/2/22	1005	RL	GW	2		X								X	
6	S014-FD-20220302-01	3/2/22	1005	RL	GW	2		X								X	
7	S014-DPT1010-005.0-20220302	3/2/22	1048	RL	GW	2		X								X	
8	S014-DPT1010-015.0-20220302	3/2/22	1101	RL	GW	2		X								X	
9	S014-DPT1010-025.0-20220302	3/2/22	1121	RL	GW	2		X								X	
10	S014-DPT1010-035.0-20220302	3/2/22	1430	RL	GW	2		X								X	
11	S014-DPT1010-045.0-20220302	3/2/22	1449	RL	GW	2		X								X	
12	S014-DPT1011-005.0-20220302	3/2/22	1514	RL	GW	2		X								X	

INITIAL ASSESSMENT

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

LABEL VERIFICATION

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL / HGL	3-1-2022 1555	2	3	3/2/22 17:10	4 3/2/22 0570
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.2 CTK1, 4.2 CTK1, 3.6 CTK1

http://www.sgs.com/en/terms-and-conditions

SGS_S014_COC_20220303 Rev 031318

FA93649: Chain of Custody
Page 1 of 4

FA93649

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 3

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION: TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NACH+ZNAC	OI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S014-DPT1011-015.0-20220302	3/2/22	1526	RL	GW	2		X								X	
14	S014-DPT1011-025.0-20220302	3/2/22	1539	RL	GW	2		X								X	
15	S014-DPT1011-035.0-20220302	3/2/22	1553	RL	GW	2		X								X	
16	S014-DPT1011-045.0-20220302	3/2/22	1613	RL	GW	2		X								X	
17	S014-FD-20220302-02	3/2/22	1613	RL	GW	2		X								X	
18	S014-FB-20220302-01	3/2/22	1641	RL	GW	2		X								X	
19	S014-EB-20220302-01	3/2/22	1645	RL	GW	2		X								X	
20	S014-DPT1012-005.0-20220303	3/3/22	0831	RL	GW	2		x								X	
21	S014-DPT1012-015.0-20220303	3/3/22	0844	RL	GW	2		x								X	
22	S014-DPT1012-025.0-20220303	3/3/22	0857	RL	GW	2		x								X	
23	S014-DPT1012-035.0-20220303	3/3/22	0916	RL	GW	2		x								X	
24	S014-DPT1012-045.0-20220303	3/3/22	0945	RL	GW	2		x								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH* _____
2 Day *RUSH* _____
1 Day *RUSH* _____
Other _____
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
TC / HGL	3-4-2022 1555	2	3	3/4/22 17:10	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____

http://www.sgs.com/en/terms-and-conditions

SGS_S014_COC_20220303 Rev 031318

SGS North America Inc - Orlando

Chain of Custody

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SGS - ORLANDO JOB # : PAGE 3 OF 3

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Sampler(s) Name(s) (Printed)
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Street Kennedy Space Center
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SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NACH+ZNA	DI WATER	MECH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
25	S014-DPT1013-005.0-20220303	3/3/22	1028	RL	GW	2		X								X	
26	S014-DPT1013-015.0-20220303	3/3/22	1040	RL	GW	2		X								X	
27	S014-FD-20220303-01	3/3/22	1040	RL	GW	2		X								X	
28	S014-DPT1013-025.0-20220303	3/3/22	1056	RL	GW	2		X								X	
29	S014-DPT1013-035.0-20220303	3/3/22	1112	RL	GW	2		X								X	
30	S014-DPT1013-045.0-20220303	3/3/22	1136	RL	GW	2		X								X	
31	S014-FB-20220303-01	3/3/22	1200	RL	GW	2		X								X	
32	S014-EB-20220303-01	3/3/22	1203	RL	GW	2		x								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL / HGL	3-4-2022 1355	2	3	3/4/22 17:10	4 3/4/22 1710
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS_S014_COC_20220303 Rev 031318

SGS Sample Receipt Summary

Job Number: FA93649 **Client:** HGL, INC **Project:** S014 PFAS ASSESSMENT

Date / Time Received: 3/4/2022 5:10:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2); Cooler 2: (4.2); Cooler 3: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.6); Cooler 2: (4.6); Cooler 3: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments FOR SAMPLE #1, ID: "S014-DPT1009-005.0-20220302", THE COC STATES THE TIME SAMPLED TO BE "0839" BUT THE LABEL ON THE BOTTLE STATES THE TIME SAMPLED TO BE "0842".

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 3/4/2022 5:10:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90144	EPA 537M QSM5.3 B-15						
OP90144-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	73-129
OP90144-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	115	%	72-129
OP90144-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	108	%	72-129
OP90144-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	113	%	72-130
OP90144-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	108	%	71-133
OP90144-BS	375-95-1	Perfluorononanoic acid	BSP	REC	126	%	69-130
OP90144-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	106	%	71-129
OP90144-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	108	%	69-133
OP90144-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	114	%	72-134
OP90144-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	113	%	65-144
OP90144-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	119	%	71-132
OP90144-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	109	%	73-130
OP90144-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	110	%	71-127
OP90144-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	105	%	68-131
OP90144-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	111	%	69-134
OP90144-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	105	%	65-140
OP90144-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	118	%	69-127
OP90144-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	93	%	53-142
OP90144-BS	754-91-6	PFOSA	BSP	REC	113	%	67-137
OP90144-BS	2355-31-9	MeFOSAA	BSP	REC	115	%	65-136
OP90144-BS	2991-50-6	EtFOSAA	BSP	REC	111	%	61-135
OP90144-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	106	%	63-143
OP90144-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	106	%	64-140
OP90144-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	108	%	67-138
OP90144-MS	375-22-4	Perfluorobutanoic acid	MS	REC	94	%	73-129
OP90144-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	119	%	72-129
OP90144-MS	307-24-4	Perfluorohexanoic acid	MS	REC	104	%	72-129
OP90144-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	113	%	72-130
OP90144-MS	335-67-1	Perfluorooctanoic acid	MS	REC	110	%	71-133
OP90144-MS	375-95-1	Perfluorononanoic acid	MS	REC	128	%	69-130
OP90144-MS	335-76-2	Perfluorodecanoic acid	MS	REC	104	%	71-129
OP90144-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	105	%	69-133
OP90144-MS	307-55-1	Perfluorododecanoic acid	MS	REC	110	%	72-134
OP90144-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	109	%	65-144
OP90144-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	114	%	71-132
OP90144-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	107	%	73-130
OP90144-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	110	%	71-127
OP90144-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	106	%	68-131
OP90144-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	117	%	69-134
OP90144-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	102	%	65-140
OP90144-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	107	%	69-127
OP90144-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	87	%	53-142

* Sample used for QC is not from job FA93649

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90144-MS	754-91-6	PFOSA	MS	REC	113	%	67-137
OP90144-MS	2355-31-9	MeFOSAA	MS	REC	111	%	65-136
OP90144-MS	2991-50-6	EtFOSAA	MS	REC	113	%	61-135
OP90144-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	106	%	63-143
OP90144-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	107	%	64-140
OP90144-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	105	%	67-138
OP90144-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	7	%	30
OP90144-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	28	%	30
OP90144-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	12	%	30
OP90144-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	11	%	30
OP90144-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	9	%	30
OP90144-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90144-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90144-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90144-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90144-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90144-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90144-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90144-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90144-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	12	%	30
OP90144-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90144-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	10	%	30
OP90144-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90144-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90144-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90144-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90144-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90144-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90144-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90144-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90369	EPA 537M QSM5.3 B-15						
OP90369-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	95	%	73-129
OP90369-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	103	%	72-129
OP90369-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	102	%	72-129
OP90369-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP90369-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	102	%	71-133
OP90369-BS	375-95-1	Perfluorononanoic acid	BSP	REC	120	%	69-130
OP90369-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	101	%	71-129
OP90369-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	102	%	69-133
OP90369-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	111	%	72-134
OP90369-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	94	%	65-144
OP90369-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	106	%	71-132
OP90369-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	102	%	73-130

* Sample used for QC is not from job FA93649

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90369-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	103	%	71-127
OP90369-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP90369-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	108	%	69-134
OP90369-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	94	%	65-140
OP90369-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	106	%	69-127
OP90369-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	88	%	53-142
OP90369-BS	754-91-6	PFOSA	BSP	REC	103	%	67-137
OP90369-BS	2355-31-9	MeFOSAA	BSP	REC	106	%	65-136
OP90369-BS	2991-50-6	EtFOSAA	BSP	REC	107	%	61-135
OP90369-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	101	%	63-143
OP90369-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP90369-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138
OP90369-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	95	%	73-129
OP90369-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	101	%	72-129
OP90369-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	103	%	72-129
OP90369-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	102	%	72-130
OP90369-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	104	%	71-133
OP90369-MS*	375-95-1	Perfluorononanoic acid	MS	REC	115	%	69-130
OP90369-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	98	%	71-129
OP90369-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	103	%	69-133
OP90369-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	113	%	72-134
OP90369-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	101	%	65-144
OP90369-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	103	%	71-132
OP90369-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	105	%	73-130
OP90369-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	104	%	71-127
OP90369-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	103	%	68-131
OP90369-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	109	%	69-134
OP90369-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	95	%	65-140
OP90369-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	110	%	69-127
OP90369-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	93	%	53-142
OP90369-MS*	754-91-6	PFOSA	MS	REC	103	%	67-137
OP90369-MS*	2355-31-9	MeFOSAA	MS	REC	103	%	65-136
OP90369-MS*	2991-50-6	EtFOSAA	MS	REC	106	%	61-135
OP90369-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	101	%	63-143
OP90369-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	101	%	64-140
OP90369-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	99	%	67-138
OP90369-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP90369-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	5	%	30
OP90369-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	107	%	72-129
OP90369-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	6	%	30
OP90369-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	109	%	72-129
OP90369-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	4	%	30
OP90369-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	106	%	72-130
OP90369-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	4	%	30
OP90369-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	109	%	71-133

* Sample used for QC is not from job FA93649

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90369-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	5	%	30
OP90369-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	124	%	69-130
OP90369-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	7	%	30
OP90369-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	108	%	71-129
OP90369-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	9	%	30
OP90369-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	109	%	69-133
OP90369-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	6	%	30
OP90369-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	119	%	72-134
OP90369-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	5	%	30
OP90369-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	106	%	65-144
OP90369-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	5	%	30
OP90369-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	109	%	71-132
OP90369-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	5	%	30
OP90369-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	109	%	73-130
OP90369-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	4	%	30
OP90369-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	109	%	71-127
OP90369-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP90369-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	117	%	68-131
OP90369-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	7	%	30
OP90369-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	116	%	69-134
OP90369-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	7	%	30
OP90369-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	100	%	65-140
OP90369-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	5	%	30
OP90369-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	116	%	69-127
OP90369-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	5	%	30
OP90369-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	95	%	53-142
OP90369-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP90369-MSD*	754-91-6	PFOSA	MSD	REC	111	%	67-137
OP90369-MSD*	754-91-6	PFOSA	MSD	RPD	8	%	30
OP90369-MSD*	2355-31-9	MeFOSAA	MSD	REC	114	%	65-136
OP90369-MSD*	2355-31-9	MeFOSAA	MSD	RPD	10	%	30
OP90369-MSD*	2991-50-6	EtFOSAA	MSD	REC	114	%	61-135
OP90369-MSD*	2991-50-6	EtFOSAA	MSD	RPD	7	%	30
OP90369-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	108	%	63-143
OP90369-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	7	%	30
OP90369-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	108	%	64-140
OP90369-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP90369-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	106	%	67-138
OP90369-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP90395	EPA 537M QSM5.3 B-15						
OP90395-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP90395-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	99	%	72-129
OP90395-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	101	%	72-129

* Sample used for QC is not from job FA93649

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93649
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/02/22 thru 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90395-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	100	%	72-130
OP90395-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	100	%	71-133
OP90395-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP90395-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	98	%	71-129
OP90395-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	99	%	69-133
OP90395-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	109	%	72-134
OP90395-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	89	%	65-144
OP90395-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	103	%	71-132
OP90395-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	101	%	73-130
OP90395-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	103	%	71-127
OP90395-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP90395-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	107	%	69-134
OP90395-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	93	%	65-140
OP90395-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP90395-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	84	%	53-142
OP90395-BS	754-91-6	PFOSA	BSP	REC	101	%	67-137
OP90395-BS	2355-31-9	MeFOSAA	BSP	REC	104	%	65-136
OP90395-BS	2991-50-6	EtFOSAA	BSP	REC	105	%	61-135
OP90395-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	101	%	63-143
OP90395-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	100	%	64-140
OP90395-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138

* Sample used for QC is not from job FA93649

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1230-IBLK	2Q87370.D	1	03/20/22	JB	n/a	n/a	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	114%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	112%	50-150%
	13C4-PFHpA	119%	50-150%
	13C8-PFOA	118%	50-150%
	13C9-PFNA	117%	50-150%
	13C6-PFDA	131%	50-150%

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1230-IBLK	2Q87370.D	1	03/20/22	JB	n/a	n/a	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	109%	50-150%
	13C2-PFDoDA	123%	50-150%
	13C2-PFTeDA	119%	50-150%
	13C3-PFBS	115%	50-150%
	13C3-PFHxS	117%	50-150%
	13C8-PFOS	122%	50-150%
	13C8-FOSA	128%	50-150%
	d3-MeFOSAA	134%	50-150%
	d5-EtFOSAA	134%	50-150%
	13C2-4:2FTS	117%	50-150%
	13C2-6:2FTS	129%	50-150%
	13C2-8:2FTS	131%	50-150%

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1233-IBLK	2Q87578.D	1	03/23/22	NG	n/a	n/a	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	114%	50-150%
	13C5-PFHxA	113%	50-150%
	13C4-PFHpA	120%	50-150%
	13C8-PFOA	118%	50-150%
	13C9-PFNA	121%	50-150%
	13C6-PFDA	137%	50-150%

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1233-IBLK	2Q87578.D	1	03/23/22	NG	n/a	n/a	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	112%	50-150%
	13C2-PFDoDA	130%	50-150%
	13C2-PFTeDA	126%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	119%	50-150%
	13C8-PFOS	123%	50-150%
	13C8-FOSA	136%	50-150%
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	135%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	113%	50-150%
	13C2-6:2FTS	123%	50-150%
	13C2-8:2FTS	131%	50-150%
	13C3-HFPO-DA	121%	50-150%

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1234-IBLK	2Q87687.D	1	03/24/22	NG	n/a	n/a	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	99%	50-150%

Instrument Blank

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1234-IBLK	2Q87687.D	1	03/24/22	NG	n/a	n/a	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSA	100%	50-150%
	d3-MeFOSAA	106%	50-150%
	d5-EtFOSAA	107%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	82%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-MB	2Q87385.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	84%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	80%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	79%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-MB	2Q87385.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	80%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	91%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	91%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-MB	2Q87582.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	74%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	75%	50-150%
	13C4-PFHpA	80%	50-150%
	13C8-PFOA	79%	50-150%
	13C9-PFNA	80%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-MB	2Q87582.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	74%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	79%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	75%	50-150%
	13C2-6:2FTS	81%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	75%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90395-MB	2Q87691.D	1	03/24/22	NG	03/23/22	OP90395	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	80%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	87%	50-150%

Method Blank Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90395-MB	2Q87691.D	1	03/24/22	NG	03/23/22	OP90395	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	82%	50-150%
	13C2-PFDoDA	72%	50-150%
	13C2-PFTeDA	65%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	77%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	72%	50-150%

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-BS	2Q87384.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.160	100	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.184	115	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.172	108	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.180	113	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.173	108	71-133
375-95-1	Perfluorononanoic acid	0.16	0.202	126	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.169	106	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.172	108	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.182	114	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.180	113	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.190	119	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.174	109	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.176	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.168	105	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.178	111	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.168	105	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.188	118	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.148	93	53-142
754-91-6	PFOSA	0.16	0.180	113	67-137
2355-31-9	MeFOSAA	0.16	0.184	115	65-136
2991-50-6	EtFOSAA	0.16	0.177	111	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.170	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.172	108	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.157	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	79%	50-150%
	13C5-PFHxA	77%	50-150%
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	77%	50-150%
	13C6-PFDA	84%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-BS	2Q87384.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	80%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	76%	50-150%
	13C8-FOSA	71%	50-150%
	d3-MeFOSAA	84%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-BS	2Q87581.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.152	95	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.164	103	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.163	102	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.163	102	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.163	102	71-133
375-95-1	Perfluorononanoic acid	0.16	0.192	120	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.162	101	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.163	102	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.178	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.151	94	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.169	106	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.163	102	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.164	103	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.166	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.173	108	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.151	94	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.170	106	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.141	88	53-142
754-91-6	PFOSA	0.16	0.165	103	67-137
2355-31-9	MeFOSAA	0.16	0.169	106	65-136
2991-50-6	EtFOSAA	0.16	0.171	107	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.162	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.164	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.161	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.176	110	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	78%	50-150%
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	79%	50-150%
	13C9-PFNA	80%	50-150%
	13C6-PFDA	88%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-BS	2Q87581.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	79%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90395-BS [a]	2Q87690.D	1	03/24/22	NG	03/23/22	OP90395	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.149	93	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.159	99	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.161	101	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.160	100	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.160	100	71-133
375-95-1	Perfluorononanoic acid	0.16	0.180	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.156	98	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.159	99	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.175	109	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.143	89	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.164	103	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.162	101	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.165	103	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.166	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.171	107	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.149	93	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.163	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.135	84	53-142
754-91-6	PFOSA	0.16	0.161	101	67-137
2355-31-9	MeFOSAA	0.16	0.166	104	65-136
2991-50-6	EtFOSAA	0.16	0.168	105	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.161	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.160	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.162	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.188	118	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	79%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	81%	50-150%
	13C4-PFHpA	86%	50-150%
	13C8-PFOA	83%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90395-BS [a]	2Q87690.D	1	03/24/22	NG	03/23/22	OP90395	S2Q1234

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-20, FA93649-25

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	65%	50-150%
	13C3-PFBS	79%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	80%	50-150%
	13C8-FOSA	87%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	77%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	74%	50-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-MS	2Q87387.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230
FA93649-21	2Q87386.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	Compound	FA93649-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0048	J	0.182	0.176	94	73-129
2706-90-3	Perfluoropentanoic acid	0.0083	U	0.182	0.217	119	72-129
307-24-4	Perfluorohexanoic acid	0.0083	U	0.182	0.190	104	72-129
375-85-9	Perfluoroheptanoic acid	0.0083	U	0.182	0.205	113	72-130
335-67-1	Perfluorooctanoic acid	0.0026	J	0.182	0.202	110	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.182	0.232	128	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.182	0.189	104	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.182	0.191	105	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.182	0.200	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.182	0.198	109	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.182	0.208	114	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.182	0.194	107	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.182	0.200	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0031	J	0.182	0.195	106	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.182	0.212	117	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0198		0.182	0.205	102	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.182	0.194	107	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.182	0.158	87	53-142
754-91-6	PFOSA	0.0083	U	0.182	0.206	113	67-137
2355-31-9	MeFOSAA	0.017	U	0.182	0.201	111	65-136
2991-50-6	EtFOSAA	0.017	U	0.182	0.205	113	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.182	0.192	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.182	0.194	107	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.182	0.191	105	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.182	0.177	97	60-140

CAS No.	ID Standard Recoveries	MS	FA93649-21	Limits
	13C4-PFBA	81%	80%	50-150%
	13C5-PFPeA	76%	75%	50-150%
	13C5-PFHxA	74%	73%	50-150%
	13C4-PFHpA	84%	82%	50-150%
	13C8-PFOA	81%	80%	50-150%
	13C9-PFNA	81%	80%	50-150%
	13C6-PFDA	91%	90%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-MS	2Q87387.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230
FA93649-21	2Q87386.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	ID Standard Recoveries	MS	FA93649-21	Limits
	13C7-PFUnDA	89%	86%	50-150%
	13C2-PFDoDA	81%	80%	50-150%
	13C2-PFTeDA	79%	78%	50-150%
	13C3-PFBS	79%	77%	50-150%
	13C3-PFHxS	82%	78%	50-150%
	13C8-PFOS	83%	78%	50-150%
	13C8-FOSA	80%	78%	50-150%
	d3-MeFOSAA	94%	90%	50-150%
	d5-EtFOSAA	90%	91%	50-150%
	13C2-4:2FTS	86%	79%	50-150%
	13C2-6:2FTS	97%	91%	50-150%
	13C2-8:2FTS	99%	91%	50-150%
	13C3-HFPO-DA		94%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-MS	2Q87584.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233
OP90369-MSD	2Q87585.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233
FA93617-1	2Q87583.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	Compound	FA93617-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0079	J	0.16	0.160	95	0.16	0.169	101	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0122		0.16	0.173	101	0.16	0.183	107	6	72-129/30
307-24-4	Perfluorohexanoic acid	0.0458		0.16	0.211	103	0.16	0.220	109	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0081		0.16	0.171	102	0.16	0.178	106	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.0281		0.16	0.194	104	0.16	0.203	109	5	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.184	115	0.16	0.198	124	7	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.157	98	0.16	0.172	108	9	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.164	103	0.16	0.175	109	6	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.180	113	0.16	0.190	119	5	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.162	101	0.16	0.170	106	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.165	103	0.16	0.174	109	5	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0247		0.16	0.192	105	0.16	0.199	109	4	73-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0240		0.16	0.190	104	0.16	0.199	109	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.151		0.16	0.316	103	0.16	0.338	117	7	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.174	109	0.16	0.186	116	7	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0303		0.16	0.182	95	0.16	0.191	100	5	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.176	110	0.16	0.185	116	5	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.149	93	0.16	0.152	95	2	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.164	103	0.16	0.178	111	8	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.165	103	0.16	0.182	114	10	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.169	106	0.16	0.182	114	7	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.161	101	0.16	0.172	108	7	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.162	101	0.16	0.172	108	6	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.159	99	0.16	0.169	106	6	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.186	116	0.16	0.192	120	3	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA93617-1	Limits
	13C4-PFBA	76%	63%	72%	50-150%
	13C5-PFPeA	80%	66%	74%	50-150%
	13C5-PFHxA	79%	65%	73%	50-150%
	13C4-PFHpA	85%	71%	80%	50-150%
	13C8-PFOA	81%	68%	77%	50-150%
	13C9-PFNA	80%	67%	76%	50-150%
	13C6-PFDA	87%	72%	83%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90369-MS	2Q87584.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233
OP90369-MSD	2Q87585.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233
FA93617-1	2Q87583.D	1	03/23/22	NG	03/22/22	OP90369	S2Q1233

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-1, FA93649-2, FA93649-3, FA93649-4, FA93649-5, FA93649-6, FA93649-7, FA93649-8, FA93649-9, FA93649-10, FA93649-11, FA93649-12, FA93649-13, FA93649-14, FA93649-15, FA93649-16

CAS No.	ID Standard Recoveries	MS	MSD	FA93617-1	Limits
	13C7-PFUnDA	85%	70%	81%	50-150%
	13C2-PFDoDA	82%	68%	78%	50-150%
	13C2-PFTeDA	81%	69%	78%	50-150%
	13C3-PFBS	78%	65%	74%	50-150%
	13C3-PFHxS	81%	67%	75%	50-150%
	13C8-PFOS	78%	66%	74%	50-150%
	13C8-FOSA	79%	62%	72%	50-150%
	d3-MeFOSAA	86%	69%	81%	50-150%
	d5-EtFOSAA	82%	66%	84%	50-150%
	13C2-4:2FTS	82%	68%	71%	50-150%
	13C2-6:2FTS	86%	71%	79%	50-150%
	13C2-8:2FTS	87%	73%	81%	50-150%
	13C3-HFPO-DA	75%	63%		50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-DUP	2Q87389.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230
FA93649-22	2Q87388.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	Compound	FA93649-22 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0055	J	0.0059	J	7	30
2706-90-3	Perfluoropentanoic acid	0.0050	J	0.0066	J	28	30
307-24-4	Perfluorohexanoic acid	0.0040	J	0.0045	J	12	30
375-85-9	Perfluoroheptanoic acid	0.0033	J	0.0037	J	11	30
335-67-1	Perfluorooctanoic acid	0.0099		0.0108		9	30
375-95-1	Perfluorononanoic acid	0.0083	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0083	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0063	J	0.0071	J	12	30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0315		0.0349		10	30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	ND		nc	30
754-91-6	PFOSA	0.0083	U	ND		nc	30
2355-31-9	MeFOSAA	0.017	U	ND		nc	30
2991-50-6	EtFOSAA	0.017	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93649-22	Limits
	13C4-PFBA	75%	78%	50-150%
	13C5-PFPeA	69%	72%	50-150%
	13C5-PFHxA	67%	70%	50-150%
	13C4-PFHpA	77%	80%	50-150%
	13C8-PFOA	78%	81%	50-150%
	13C9-PFNA	78%	82%	50-150%
	13C6-PFDA	87%	92%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93649
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90144-DUP	2Q87389.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230
FA93649-22	2Q87388.D	1	03/20/22	JB	03/08/22	OP90144	S2Q1230

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93649-17, FA93649-18, FA93649-19, FA93649-21, FA93649-22, FA93649-23, FA93649-24, FA93649-26, FA93649-27, FA93649-28, FA93649-29, FA93649-30, FA93649-31, FA93649-32

CAS No.	ID Standard Recoveries	DUP	FA93649-22	Limits
	13C7-PFUnDA	83%	90%	50-150%
	13C2-PFDoDA	76%	82%	50-150%
	13C2-PFTeDA	77%	80%	50-150%
	13C3-PFBS	72%	76%	50-150%
	13C3-PFHxS	76%	79%	50-150%
	13C8-PFOS	74%	82%	50-150%
	13C8-FOSA	79%	83%	50-150%
	d3-MeFOSAA	88%	96%	50-150%
	d5-EtFOSAA	90%	94%	50-150%
	13C2-4:2FTS	74%	76%	50-150%
	13C2-6:2FTS	89%	93%	50-150%
	13C2-8:2FTS	90%	95%	50-150%
	13C3-HFPO-DA		91%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

S014 ns1010.01.06

SGS Job Number: FA93650

Sampling Date: 03/04/22



Report to:

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Total number of pages in report: 52

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA93650

NASA TQN 21- SLF PFAS Assessment
Project No: S014 ns1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93650-1	03/04/22	09:38	RL	03/04/22	AQ	Ground Water	S014-DPT1014-005.0-20220304
FA93650-2	03/04/22	09:38	RL	03/04/22	AQ	Ground Water	S014-FD-20220304-01
FA93650-3	03/04/22	09:54	RL	03/04/22	AQ	Ground Water	S014-DPT1014-015.0-20220304
FA93650-4	03/04/22	10:06	RL	03/04/22	AQ	Ground Water	S014-DPT1014-025.0-20220304
FA93650-5	03/04/22	10:21	RL	03/04/22	AQ	Ground Water	S014-DPT1014-035.0-20220304
FA93650-6	03/04/22	10:43	RL	03/04/22	AQ	Ground Water	S014-DPT1014-045.0-20220304
FA93650-7	03/04/22	12:07	RL	03/04/22	AQ	Ground Water	S014-DPT1015-005.0-20220304
FA93650-8	03/04/22	12:17	RL	03/04/22	AQ	Ground Water	S014-DPT1015-015.0-20220304
FA93650-9	03/04/22	12:29	RL	03/04/22	AQ	Ground Water	S014-DPT1015-025.0-20220304
FA93650-10	03/04/22	12:43	RL	03/04/22	AQ	Ground Water	S014-DPT1015-035.0-20220304
FA93650-11	03/04/22	13:04	RL	03/04/22	AQ	Ground Water	S014-DPT1015-045.0-20220304
FA93650-12	03/04/22	13:30	RL	03/04/22	AQ	Field Blank Water	S014-FB-20220304-01
FA93650-13	03/04/22	13:33	RL	03/04/22	AQ	Equipment Blank	S014-EB-20220304-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93650

Site: NASA TQN 21- SLF PFAS Assessment **Report Date** 3/25/2022 1:57:35 PM

On 03/04/2022, 12 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93650 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90145

Sample(s) FA93650-11DUP, FA93650-5MS were used as the QC samples indicated.

Sample(s) FA93650-1, FA93650-10, FA93650-2, FA93650-7 have surrogates outside control limits.

FA93650-1 for 13C2-PFTeDA: Outside control limits.

FA93650-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93650-1: Dilution required due to matrix interference (ID recovery standard failure).

FA93650-2 for 13C2-PFTeDA: Outside control limits.

FA93650-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93650-2: Dilution required due to matrix interference (ID recovery standard failure).

FA93650-7 for 13C2-PFTeDA: Outside control limits.

FA93650-7 for 13C8-FOSA: Outside control limits.

FA93650-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93650-7: Dilution required due to matrix interference (ID recovery standard failure).

FA93650-10 for 13C2-PFTeDA: Outside control limits.

FA93650-10 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA93650-10: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA93650
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93650-1	**S014-DPT1014-005.0-20220304**					
Perfluorobutanoic acid		0.0047 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-2	**S014-FD-20220304-01**					
Perfluorobutanoic acid		0.0049 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0021 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-3	**S014-DPT1014-015.0-20220304**					
Perfluorobutanoic acid		0.0159 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0115	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0118	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0074 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0084	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0104	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0646	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.117	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0046 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93650-4	**S014-DPT1014-025.0-20220304**					
Perfluorobutanoic acid		0.0063 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0134	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0219	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0056 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0108	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0132	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0168	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0920	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0052 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.258	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0027 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0097 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
FA93650-5	**S014-DPT1014-035.0-20220304**					
Perfluorobutanoic acid		0.0099 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0352	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93650
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanoic acid		0.0442	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0185	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0254	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0170	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0224	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.161	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0104	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.373	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0208	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93650-6	**S014-DPT1014-045.0-20220304**					
Perfluorohexanoic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0049 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-7	**S014-DPT1015-005.0-20220304**					
Perfluoropentanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0024 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0061 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-8	**S014-DPT1015-015.0-20220304**					
Perfluorobutanoic acid		0.0104 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0329	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0296	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-9	**S014-DPT1015-025.0-20220304**					
Perfluorohexanesulfonic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93650-10	**S014-DPT1015-035.0-20220304**					

No hits reported in this sample.

Summary of Hits

Job Number: FA93650
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA93650-11 S014-DPT1015-045.0-20220304

No hits reported in this sample.

FA93650-12 S014-FB-20220304-01

No hits reported in this sample.

FA93650-13 S014-EB-20220304-01

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-DPT1014-005.0-20220304
Lab Sample ID: FA93650-1 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87471.D	1	03/21/22 23:54	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2 [a]	2Q87528.D	5	03/22/22 16:39	NG	03/08/22 09:30	OP90145	S2Q1232

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0047	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1014-005.0-20220304		
Lab Sample ID:	FA93650-1	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%	78%	50-150%
	13C5-PFPeA	67%	77%	50-150%
	13C5-PFHxA	65%	75%	50-150%
	13C4-PFHpA	73%	81%	50-150%
	13C8-PFOA	75%	81%	50-150%
	13C9-PFNA	78%	83%	50-150%
	13C6-PFDA	88%	94%	50-150%
	13C7-PFUnDA	86%	88%	50-150%
	13C2-PFDoDA	76%	74%	50-150%
	13C2-PFTeDA	42% d	41% d	50-150%
	13C3-PFBS	73%	81%	50-150%
	13C3-PFHxS	78%	83%	50-150%
	13C8-PFOS	79%	88%	50-150%
	13C8-FOSA	57%	60%	50-150%
	d3-MeFOSAA	83%	86%	50-150%
	d5-EtFOSAA	79%	87%	50-150%
	13C2-4:2FTS	69%	79%	50-150%
	13C2-6:2FTS	85%	90%	50-150%
	13C2-8:2FTS	90%	94%	50-150%
	13C3-HFPO-DA	78%	79%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220304-01
Lab Sample ID: FA93650-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87472.D	1	03/22/22 00:11	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2 [a]	2Q87529.D	5	03/22/22 16:56	NG	03/08/22 09:30	OP90145	S2Q1232

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0049	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220304-01
Lab Sample ID: FA93650-2 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%	79%	50-150%
	13C5-PFPeA	68%	77%	50-150%
	13C5-PFHxA	67%	76%	50-150%
	13C4-PFHpA	76%	82%	50-150%
	13C8-PFOA	77%	83%	50-150%
	13C9-PFNA	79%	87%	50-150%
	13C6-PFDA	90%	95%	50-150%
	13C7-PFUnDA	89%	89%	50-150%
	13C2-PFDoDA	78%	77%	50-150%
	13C2-PFTeDA	46% d	43% d	50-150%
	13C3-PFBS	73%	84%	50-150%
	13C3-PFHxS	79%	84%	50-150%
	13C8-PFOS	83%	86%	50-150%
	13C8-FOSA	53%	58%	50-150%
	d3-MeFOSAA	85%	93%	50-150%
	d5-EtFOSAA	81%	91%	50-150%
	13C2-4:2FTS	70%	80%	50-150%
	13C2-6:2FTS	88%	91%	50-150%
	13C2-8:2FTS	93%	97%	50-150%
	13C3-HFPO-DA	79%	87%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-015.0-20220304
Lab Sample ID: FA93650-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87473.D	1	03/22/22 00:27	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0159	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0115	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0118	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0074	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0084	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0104	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0646	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.117	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0046	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-015.0-20220304
Lab Sample ID: FA93650-3 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%		50-150%
	13C5-PFPeA	53%		50-150%
	13C5-PFHxA	55%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	58%		50-150%
	13C3-PFHxS	70%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	70%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	85%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	70%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-025.0-20220304
Lab Sample ID: FA93650-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87474.D	1	03/22/22 00:44	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0063	0.017	0.0087	0.0043	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0134	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0219	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0056	0.0087	0.0043	0.0022	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0108	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0132	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0168	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0920	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0052	0.0087	0.0043	0.0022	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.258	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0027	0.0087	0.0043	0.0022	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0097	0.017	0.0087	0.0043	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-025.0-20220304
Lab Sample ID: FA93650-4 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%		50-150%
	13C5-PFPeA	53%		50-150%
	13C5-PFHxA	55%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	75%		50-150%
	13C6-PFDA	88%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	65%		50-150%
	13C3-PFBS	58%		50-150%
	13C3-PFHxS	68%		50-150%
	13C8-PFOS	77%		50-150%
	13C8-FOSA	70%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	69%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-035.0-20220304
Lab Sample ID: FA93650-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87467.D	1	03/21/22 22:47	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0099	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0352	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0442	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0185	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0254	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0170	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0224	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.161	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0104	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.373	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0208	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1014-035.0-20220304		
Lab Sample ID:	FA93650-5	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	86%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	69%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	97%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-045.0-20220304
Lab Sample ID: FA93650-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87477.D	1	03/22/22 01:34	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0049	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1014-045.0-20220304
Lab Sample ID: FA93650-6 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	61%		50-150%
	13C4-PFHpA	73%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	93%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-005.0-20220304		
Lab Sample ID:	FA93650-7	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87478.D	1	03/22/22 01:51	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2 [a]	2Q87530.D	5	03/22/22 17:13	NG	03/08/22 09:30	OP90145	S2Q1232

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0024	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0061	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-005.0-20220304		
Lab Sample ID:	FA93650-7	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	66%	50-150%
	13C5-PFPeA	55%	64%	50-150%
	13C5-PFHxA	54%	63%	50-150%
	13C4-PFHpA	65%	68%	50-150%
	13C8-PFOA	67%	69%	50-150%
	13C9-PFNA	70%	72%	50-150%
	13C6-PFDA	76%	78%	50-150%
	13C7-PFUnDA	68%	67%	50-150%
	13C2-PFDoDA	50%	50%	50-150%
	13C2-PFTeDA	30% d	30% d	50-150%
	13C3-PFBS	63%	69%	50-150%
	13C3-PFHxS	70%	72%	50-150%
	13C8-PFOS	72%	76%	50-150%
	13C8-FOSA	39% d	42% d	50-150%
	d3-MeFOSAA	61%	65%	50-150%
	d5-EtFOSAA	61%	67%	50-150%
	13C2-4:2FTS	57%	66%	50-150%
	13C2-6:2FTS	76%	77%	50-150%
	13C2-8:2FTS	79%	79%	50-150%
	13C3-HFPO-DA	61%	65%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1015-015.0-20220304
Lab Sample ID: FA93650-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87479.D	1	03/22/22 02:08	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0104	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0329	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0296	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-015.0-20220304		
Lab Sample ID:	FA93650-8	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%		50-150%
	13C5-PFPeA	52%		50-150%
	13C5-PFHxA	55%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	75%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	87%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	58%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	75%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	88%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	84%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	69%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1015-025.0-20220304
Lab Sample ID: FA93650-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87480.D	1	03/22/22 02:25	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-025.0-20220304		
Lab Sample ID:	FA93650-9	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	62%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	88%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1015-035.0-20220304
Lab Sample ID: FA93650-10
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87481.D	1	03/22/22 02:41	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2 [a]	2Q87531.D	5	03/22/22 17:30	NG	03/08/22 09:30	OP90145	S2Q1232

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-035.0-20220304		
Lab Sample ID:	FA93650-10	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%	82%	50-150%
	13C5-PFPeA	68%	80%	50-150%
	13C5-PFHxA	68%	78%	50-150%
	13C4-PFHpA	79%	85%	50-150%
	13C8-PFOA	82%	85%	50-150%
	13C9-PFNA	84%	87%	50-150%
	13C6-PFDA	92%	94%	50-150%
	13C7-PFUnDA	88%	87%	50-150%
	13C2-PFDoDA	77%	77%	50-150%
	13C2-PFTeDA	48% d	49% d	50-150%
	13C3-PFBS	73%	82%	50-150%
	13C3-PFHxS	80%	86%	50-150%
	13C8-PFOS	82%	84%	50-150%
	13C8-FOSA	77%	79%	50-150%
	d3-MeFOSAA	89%	94%	50-150%
	d5-EtFOSAA	87%	96%	50-150%
	13C2-4:2FTS	70%	83%	50-150%
	13C2-6:2FTS	92%	95%	50-150%
	13C2-8:2FTS	92%	94%	50-150%
	13C3-HFPO-DA	83%	79%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1015-045.0-20220304		
Lab Sample ID:	FA93650-11	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87469.D	1	03/21/22 23:20	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1015-045.0-20220304
Lab Sample ID: FA93650-11 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	76%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	88%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220304-01
Lab Sample ID: FA93650-12
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87482.D	1	03/22/22 02:58	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220304-01
Lab Sample ID: FA93650-12 **Date Sampled:** 03/04/22
Matrix: AQ - Field Blank Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	80%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	83%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	82%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	92%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220304-01
Lab Sample ID: FA93650-13
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87483.D	1	03/22/22 03:15	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-EB-20220304-01		
Lab Sample ID:	FA93650-13	**Date Sampled:**	03/04/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	87%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando
Chain of Custody

FA93650

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S014-DPT1014-005.0-20220304	3/4/22	0938	RL	GW	2		X								X	
2	S014-FD-20220304-01	3/4/22	0938	RL	GW	2		X								X	
3	S014-DPT1014-015.0-20220304	3/4/22	0954	RL	GW	2		X								X	
4	S014-DPT1014-025.0-20220304	3/4/22	1006	RL	GW	2		X								X	
5	S014-DPT1014-035.0-20220304	3/4/22	1021	RL	GW	2		X								X	
6	S014-DPT1014-045.0-20220304	3/4/22	1043	RL	GW	2		X								X	
7	S014-DPT1015-005.0-20220304	3/4/22	1207	RL	GW	2		X								X	
8	S014-DPT1015-015.0-20220304	3/4/22	1217	RL	GW	2		X								X	
9	S014-DPT1015-025.0-20220304	3/4/22	1229	RL	GW	2		X								X	
10	S014-DPT1015-035.0-20220304	3/4/22	1243	RL	GW	2		X								X	
11	S014-DPT1015-045.0-20220304	3/4/22	1304	RL	GW	2		X								X	
12	S014-FB-20220304-01	3/4/22	1330	RL	GW	2		X								X	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL / HGL	3-1-2022 1555	2	3	3/4/22 17:10	4 3/4/22 17:10
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.2, 4.2, 3.6 IR

http://www.sgs.com/en/terms-and-conditions

SGS_S014_COC_20220304 Rev 031318

SGS North America Inc - Orlando

Chain of Custody

FA93650

SGS - ORLANDO JOB # : PAGE 2 OF 2

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH-ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S014-EB-20220304-01	3/4/22	1333	RL	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
TCL / HGL	3-4-2022 1555	2	3	3/4/22 17:10	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 3/4/22 17:10

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS_S014_COC_20220304 Rev 031318

SGS Sample Receipt Summary

Job Number: FA93650 **Client:** HGL **Project:** 5014 PFAS ASSESSMENT

Date / Time Received: 3/4/2022 5:10:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2); Cooler 2: (4.2); Cooler 3: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.6); Cooler 2: (4.6); Cooler 3: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/4/2022 5:10:00 PM Reviewer: _____ Date: _____

FA93650: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93650
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90145	EPA 537M QSM5.3 B-15						
OP90145-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP90145-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	104	%	72-129
OP90145-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP90145-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP90145-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	101	%	71-133
OP90145-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP90145-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	95	%	71-129
OP90145-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP90145-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	101	%	72-134
OP90145-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	98	%	65-144
OP90145-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	107	%	71-132
OP90145-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	73-130
OP90145-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	97	%	71-127
OP90145-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	98	%	68-131
OP90145-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	103	%	69-134
OP90145-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	95	%	65-140
OP90145-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP90145-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	81	%	53-142
OP90145-BS	754-91-6	PFOSA	BSP	REC	99	%	67-137
OP90145-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	65-136
OP90145-BS	2991-50-6	EtFOSAA	BSP	REC	101	%	61-135
OP90145-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP90145-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	97	%	64-140
OP90145-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP90145-MS	375-22-4	Perfluorobutanoic acid	MS	REC	92	%	73-129
OP90145-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	117	%	72-129
OP90145-MS	307-24-4	Perfluorohexanoic acid	MS	REC	101	%	72-129
OP90145-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	106	%	72-130
OP90145-MS	335-67-1	Perfluorooctanoic acid	MS	REC	106	%	71-133
OP90145-MS	375-95-1	Perfluorononanoic acid	MS	REC	119	%	69-130
OP90145-MS	335-76-2	Perfluorodecanoic acid	MS	REC	100	%	71-129
OP90145-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	102	%	69-133
OP90145-MS	307-55-1	Perfluorododecanoic acid	MS	REC	106	%	72-134
OP90145-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	96	%	65-144
OP90145-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	108	%	71-132
OP90145-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	104	%	73-130
OP90145-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	111	%	71-127
OP90145-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	109	%	68-131
OP90145-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	117	%	69-134
OP90145-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	118	%	65-140
OP90145-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	109	%	69-127
OP90145-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	84	%	53-142

* Sample used for QC is not from job FA93650

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93650
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90145-MS	754-91-6	PFOSA	MS	REC	108	%	67-137
OP90145-MS	2355-31-9	MeFOSAA	MS	REC	109	%	65-136
OP90145-MS	2991-50-6	EtFOSAA	MS	REC	104	%	61-135
OP90145-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	102	%	63-143
OP90145-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	101	%	64-140
OP90145-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	102	%	67-138
OP90145-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90145-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90145-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP90145-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90145-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90145-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90145-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90145-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90145-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90145-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90145-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90145-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90145-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90145-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90145-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90145-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90145-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93650

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	108%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	121%	50-150%

Instrument Blank

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	117%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	124%	50-150%
	d3-MeFOSA	120%	50-150%
	d3-MeFOSAA	126%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	118%	50-150%
	13C2-8:2FTS	124%	50-150%
	13C3-HFPO-DA	116%	50-150%

Instrument Blank

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1232-IBLK	2Q87525.D	1	03/22/22	NG	n/a	n/a	S2Q1232

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-7, FA93650-10

CAS No.	Compound	Result	RL	MDL	Units	Q
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	110%	50-150%
	13C5-PFPeA	111%	50-150%
	13C5-PFHxA	110%	50-150%
	13C4-PFHpA	116%	50-150%
	13C8-PFOA	116%	50-150%
	13C9-PFNA	118%	50-150%
	13C6-PFDA	133%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	126%	50-150%
	13C2-PFTeDA	123%	50-150%
	13C3-PFBS	111%	50-150%
	13C3-PFHxS	115%	50-150%
	13C8-PFOS	120%	50-150%
	13C8-FOSA	135%	50-150%
	d3-MeFOSA	126%	50-150%
	d3-MeFOSAA	136%	50-150%
	d5-EtFOSAA	133%	50-150%
	13C2-4:2FTS	113%	50-150%
	13C2-6:2FTS	126%	50-150%
	13C2-8:2FTS	131%	50-150%
	13C3-HFPO-DA	116%	50-150%

Method Blank Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MB	2Q87466.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	71%	50-150%
	13C4-PFHpA	75%	50-150%
	13C8-PFOA	74%	50-150%
	13C9-PFNA	75%	50-150%
	13C6-PFDA	82%	50-150%

Method Blank Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MB	2Q87466.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	73%	50-150%
	13C3-PFHxS	74%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	84%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	82%	50-150%

Blank Spike Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-BS	2Q87465.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.148	93	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.166	104	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.156	98	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.163	102	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.161	101	71-133
375-95-1	Perfluorononanoic acid	0.16	0.181	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.152	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.154	96	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.162	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.156	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.171	107	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.156	98	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.155	97	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.156	98	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.165	103	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.152	95	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.163	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.130	81	53-142
754-91-6	PFOSA	0.16	0.158	99	67-137
2355-31-9	MeFOSAA	0.16	0.158	99	65-136
2991-50-6	EtFOSAA	0.16	0.162	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.156	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.155	97	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.152	95	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.152	95	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	82%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	91%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-BS	2Q87465.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	86%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	91%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MS	2Q87468.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-5	2Q87467.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	Compound	FA93650-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0099	J	0.16	0.157	92	73-129
2706-90-3	Perfluoropentanoic acid	0.0352		0.16	0.223	117	72-129
307-24-4	Perfluorohexanoic acid	0.0442		0.16	0.206	101	72-129
375-85-9	Perfluoroheptanoic acid	0.0185		0.16	0.188	106	72-130
335-67-1	Perfluorooctanoic acid	0.0254		0.16	0.195	106	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.190	119	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.160	100	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.163	102	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.169	106	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.153	96	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.172	108	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0170		0.16	0.184	104	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0224		0.16	0.200	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.161		0.16	0.336	109	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0104		0.16	0.197	117	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.373		0.16	0.561	118	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.174	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.134	84	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.172	108	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.174	109	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.166	104	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.163	102	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.0208		0.16	0.183	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.163	102	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.149	93	60-140

CAS No.	ID Standard Recoveries	MS	FA93650-5	Limits
	13C4-PFBA	65%	66%	50-150%
	13C5-PFPeA	61%	62%	50-150%
	13C5-PFHxA	62%	63%	50-150%
	13C4-PFHpA	77%	76%	50-150%
	13C8-PFOA	81%	81%	50-150%
	13C9-PFNA	84%	82%	50-150%
	13C6-PFDA	94%	94%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MS	2Q87468.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-5	2Q87467.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	ID Standard Recoveries	MS	FA93650-5	Limits
	13C7-PFUnDA	93%	91%	50-150%
	13C2-PFDoDA	87%	86%	50-150%
	13C2-PFTeDA	73%	75%	50-150%
	13C3-PFBS	67%	69%	50-150%
	13C3-PFHxS	77%	76%	50-150%
	13C8-PFOS	83%	81%	50-150%
	13C8-FOSA	74%	86%	50-150%
	d3-MeFOSAA	95%	97%	50-150%
	d5-EtFOSAA	94%	96%	50-150%
	13C2-4:2FTS	69%	66%	50-150%
	13C2-6:2FTS	93%	91%	50-150%
	13C2-8:2FTS	102%	95%	50-150%
	13C3-HFPO-DA	81%	80%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-DUP	2Q87470.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-11	2Q87469.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	Compound	FA93650-11 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93650-11	Limits
	13C4-PFBA	75%	78%	50-150%
	13C5-PFPeA	70%	73%	50-150%
	13C5-PFHxA	68%	70%	50-150%
	13C4-PFHpA	77%	80%	50-150%
	13C8-PFOA	79%	83%	50-150%
	13C9-PFNA	82%	85%	50-150%
	13C6-PFDA	91%	94%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93650
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-DUP	2Q87470.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-11	2Q87469.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93650-1, FA93650-2, FA93650-3, FA93650-4, FA93650-5, FA93650-6, FA93650-7, FA93650-8, FA93650-9, FA93650-10, FA93650-11, FA93650-12, FA93650-13

CAS No.	ID Standard Recoveries	DUP	FA93650-11	Limits
	13C7-PFUnDA	90%	95%	50-150%
	13C2-PFDoDA	83%	88%	50-150%
	13C2-PFTeDA	71%	76%	50-150%
	13C3-PFBS	75%	77%	50-150%
	13C3-PFHxS	79%	81%	50-150%
	13C8-PFOS	83%	85%	50-150%
	13C8-FOSA	83%	88%	50-150%
	d3-MeFOSAA	91%	92%	50-150%
	d5-EtFOSAA	91%	96%	50-150%
	13C2-4:2FTS	71%	73%	50-150%
	13C2-6:2FTS	88%	92%	50-150%
	13C2-8:2FTS	93%	98%	50-150%
	13C3-HFPO-DA	83%	86%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.13

SGS Job Number: FA96630

Sampling Date: 06/15/22



Report to:

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2405 N Courtenay Pkwy Suite 203
Merritt Island, FL 32953
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ATTN: Denise Rivers

Total number of pages in report: 53

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Ariel Hartney 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Sample Summary

Hydrogeologic, Inc.

Job No: FA96630

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.13

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96630-1	06/15/22	08:25	WD	06/17/22	AQ	Surface Water	S014-SW0006-000.0-20220615
FA96630-2	06/15/22	08:25	WD	06/17/22	AQ	Surface Water	S014-FD-20220615-01
FA96630-3	06/15/22	08:50	WD	06/17/22	AQ	Surface Water	S014-SW0007-000.0-20220615
FA96630-4	06/15/22	09:00	WD	06/17/22	AQ	Surface Water	S014-SW0008-000.0-20220615
FA96630-5	06/15/22	09:20	WD	06/17/22	AQ	Surface Water	S014-SW0009-000.0-20220615
FA96630-6	06/15/22	09:35	WD	06/17/22	AQ	Surface Water	S014-SW0010-000.0-20220615
FA96630-7	06/15/22	09:50	WD	06/17/22	AQ	Surface Water	S014-SW0011-000.0-20220615
FA96630-8	06/15/22	09:55	WD	06/17/22	AQ	Field Blank Water	S014-FB-20220615-01
FA96630-9	06/15/22	10:00	WD	06/17/22	AQ	Equipment Blank	S014-EB-20220615-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96630

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 7/20/2022 2:34:05 PM

On 06/17/2022, 8 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96630 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91875

Sample(s) FA96602-1MS, FA96602-1MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for Perfluoroheptanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7 have surrogates outside control limits.

FA96630-1: Confirmation run.

FA96630-2: Confirmation run.

FA96630-3: Confirmation run.

FA96630-4: Confirmation run.

FA96630-5: Confirmation run.

FA96630-6: Confirmation run.

FA96630-7: Confirmation run.

Matrix: AQ **Batch ID:** OP91991

Sample(s) FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7 have surrogates outside control limits.

FA96630-1 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for Perfluoropentanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for 13C2-4:2FTS: Outside control limits.

FA96630-1 for 13C2-PFTeDA: Outside control limits.

FA96630-1 for Perfluorohexanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for 13C8-FOSA: Outside control limits.

FA96630-1 for 13C3-HFPO-DA: Outside control limits.

FA96630-1 for 13C3-PFBS: Outside control limits.

FA96630-1 for 13C5-PFHxA: Outside control limits.

FA96630-1 for 13C5-PFPeA: Outside control limits.

FA96630-1 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-1 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for Perfluorohexanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for 13C3-HFPO-DA: Outside control limits.

FA96630-2 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91991

FA96630-2 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for Perfluoropentanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-2 for 13C2-PFTeDA: Outside control limits.

FA96630-2 for 13C3-PFBS: Outside control limits.

FA96630-2 for 13C5-PFHxA: Outside control limits.

FA96630-2 for 13C5-PFPeA: Outside control limits.

FA96630-2 for 13C2-4:2FTS: Outside control limits.

FA96630-2 for 13C8-FOSA: Outside control limits.

FA96630-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-3 for 13C8-FOSA: Outside control limits.

FA96630-3 for 13C2-PFTeDA: Outside control limits.

FA96630-3 for 13C3-HFPO-DA: Outside control limits.

FA96630-4 for 13C2-PFTeDA: Outside control limits.

FA96630-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-4 for 13C2-PFTeDA: Outside control limits.

FA96630-4 for 13C3-HFPO-DA: Outside control limits.

FA96630-4 for 13C8-FOSA: Outside control limits.

FA96630-5 for Perfluoropentanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-5 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-5 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-5 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-5 for 13C2-PFTeDA: Outside control limits.

FA96630-5 for 13C3-HFPO-DA: Outside control limits.

FA96630-5 for 13C5-PFPeA: Outside control limits.

FA96630-5 for 13C8-FOSA: Outside control limits.

FA96630-6 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-6 for Perfluorohexanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-6 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-6 for Perfluoropentanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-6 for 13C2-PFTeDA: Outside control limits.

FA96630-6 for 13C3-HFPO-DA: Outside control limits.

FA96630-6 for 13C5-PFHxA: Outside control limits.

FA96630-6 for 13C5-PFPeA: Outside control limits.

FA96630-6 for 13C8-FOSA: Outside control limits.

FA96630-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-7 for 13C2-PFTeDA: Outside control limits.

FA96630-7 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-7 for Perfluoropentanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-7 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96630-7 for 13C3-HFPO-DA: Outside control limits.

FA96630-7 for 13C5-PFPeA: Outside control limits.

FA96630-7 for 13C8-FOSA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96630-1	**S014-SW0006-000.0-20220615**					
Perfluorobutanoic acid		0.0234	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0319	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0324	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0238	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0206	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0228	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0234	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.205	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0173	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.729	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96630-2	**S014-FD-20220615-01**					
Perfluorobutanoic acid		0.0223	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0307	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0310	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0231	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0203	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0049 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0262	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0216	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.194	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0159	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.705	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96630-3	**S014-SW0007-000.0-20220615**					
Perfluorobutanoic acid		0.0745	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.176	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.210	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0908	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0815	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.010	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.167	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		1.13	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0625	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.48	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
FA96630-4	**S014-SW0008-000.0-20220615**					
Perfluorobutanoic acid		0.0601	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanoic acid		0.125	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.147	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0436	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0482	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0689	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0840	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.556	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0306	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.824	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0471	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA96630-5	**S014-SW0009-000.0-20220615**					
Perfluorobutanoic acid		0.0351	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0508	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0430	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0401	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0159	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0128	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0174	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.176	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0080	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.317	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0122 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA96630-6	**S014-SW0010-000.0-20220615**					
Perfluorobutanoic acid		0.0362	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0286	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0248	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0269	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0133	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0087	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0118	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0937	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0047 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.211	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0097 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA96630-7	**S014-SW0011-000.0-20220615**					
Perfluorobutanoic acid		0.0241	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanoic acid [a]		0.0164	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0121	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0136	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0079 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0056 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0392	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0767	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0058 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15

FA96630-8 S014-FB-20220615-01

No hits reported in this sample.

FA96630-9 S014-EB-20220615-01

No hits reported in this sample.

(a) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-SW0006-000.0-20220615
Lab Sample ID: FA96630-1
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62812.D	1	07/16/22 03:11	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62434.D	1	07/07/22 10:13	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0234	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0319	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0324	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0238	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0206	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0228	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0234	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.205	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0173	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.729	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0006-000.0-20220615		
Lab Sample ID:	FA96630-1	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%	48% [c]	50-150%
	13C5-PFPeA	45% [c]	35% [c]	50-150%
	13C5-PFHxA	45% [c]	35% [c]	50-150%
	13C4-PFHpA	61%	42% [c]	50-150%
	13C8-PFOA	78%	55%	50-150%
	13C9-PFNA	65%	47% [c]	50-150%
	13C6-PFDA	71%	52%	50-150%
	13C7-PFUnDA	70%	57%	50-150%
	13C2-PFDoDA	55%	52%	50-150%
	13C2-PFTeDA	30% [c]	42% [c]	50-150%
	13C3-PFBS	46% [c]	37% [c]	50-150%
	13C3-PFHxS	72%	51%	50-150%
	13C8-PFOS	60%	46% [c]	50-150%
	13C8-FOSA	26% [c]	32% [c]	50-150%
	d3-MeFOSAA	87%	69%	50-150%
	d5-EtFOSAA	64%	58%	50-150%
	13C2-4:2FTS	48% [c]	38% [c]	50-150%
	13C2-6:2FTS	93%	64%	50-150%
	13C2-8:2FTS	78%	57%	50-150%
	13C3-HFPO-DA	40% [c]	28% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220615-01
Lab Sample ID: FA96630-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62813.D	1	07/16/22 03:30	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62435.D	1	07/07/22 10:31	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0223	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0307	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0310	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0231	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0203	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0049	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0262	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0216	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.194	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0159	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.705	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220615-01		
Lab Sample ID:	FA96630-2	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	47% [c]	50-150%
	13C5-PFPeA	45% [c]	34% [c]	50-150%
	13C5-PFHxA	44% [c]	34% [c]	50-150%
	13C4-PFHpA	61%	42% [c]	50-150%
	13C8-PFOA	76%	55%	50-150%
	13C9-PFNA	63%	48% [c]	50-150%
	13C6-PFDA	70%	53%	50-150%
	13C7-PFUnDA	74%	61%	50-150%
	13C2-PFDoDA	61%	53%	50-150%
	13C2-PFTeDA	43% [c]	40% [c]	50-150%
	13C3-PFBS	45% [c]	36% [c]	50-150%
	13C3-PFHxS	71%	51%	50-150%
	13C8-PFOS	59%	48% [c]	50-150%
	13C8-FOSA	28% [c]	32% [c]	50-150%
	d3-MeFOSAA	90%	76%	50-150%
	d5-EtFOSAA	68%	63%	50-150%
	13C2-4:2FTS	48% [c]	38% [c]	50-150%
	13C2-6:2FTS	91%	66%	50-150%
	13C2-8:2FTS	80%	62%	50-150%
	13C3-HFPO-DA	40% [c]	28% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0007-000.0-20220615		
Lab Sample ID:	FA96630-3	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62814.D	1	07/16/22 03:48	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62436.D	1	07/07/22 10:50	NG	06/29/22 10:05	OP91875	S3Q851
Run #3	3Q62980.D	5	07/19/22 00:13	MV	07/08/22 09:55	OP91991	S3Q859

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0745	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.176	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.210	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0908	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0815	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.010	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.127	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.167	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.13 [c]	0.040	0.020	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0625	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.48 [c]	0.040	0.020	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0007-000.0-20220615		
Lab Sample ID:	FA96630-3	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [c]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	66%	40% [d]	90%	50-150%
	13C5-PFPeA	51%	32% [d]	91%	50-150%
	13C5-PFHxA	52%	32% [d]	89%	50-150%
	13C4-PFHpA	65%	37% [d]	98%	50-150%
	13C8-PFOA	81%	48% [d]	111%	50-150%
	13C9-PFNA	69%	43% [d]	98%	50-150%
	13C6-PFDA	73%	45% [d]	88%	50-150%
	13C7-PFUnDA	75%	48% [d]	70%	50-150%
	13C2-PFDoDA	59%	40% [d]	53%	50-150%
	13C2-PFTeDA	31% [d]	26% [d]	35% [d]	50-150%
	13C3-PFBS	53%	34% [d]	93%	50-150%
	13C3-PFHxS	73%	45% [d]	109%	50-150%
	13C8-PFOS	65%	41% [d]	95%	50-150%
	13C8-FOSA	42% [d]	33% [d]	64%	50-150%
	d3-MeFOSAA	87%	58%	88%	50-150%
	d5-EtFOSAA	66%	52%	76%	50-150%
	13C2-4:2FTS	56%	35% [d]	97%	50-150%
	13C2-6:2FTS	94%	56%	115%	50-150%
	13C2-8:2FTS	80%	47% [d]	85%	50-150%
	13C3-HFPO-DA	47% [d]	27% [d]	81%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0008-000.0-20220615		
Lab Sample ID:	FA96630-4	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62981.D	1	07/19/22 00:31	MV	07/08/22 09:55	OP91991	S3Q859
Run #2 [a]	3Q62437.D	1	07/07/22 11:08	NG	06/29/22 10:05	OP91875	S3Q851
Run #3	3Q62982.D	2	07/19/22 00:50	MV	07/08/22 09:55	OP91991	S3Q859

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0601	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.125	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.147	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0436	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0482	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0689	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0840	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.556	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0306	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.824 [c]	0.016	0.0080	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0080 U [c]	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0008-000.0-20220615
Lab Sample ID: FA96630-4 **Date Sampled:** 06/15/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0471	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.016 U [c]	0.032	0.016	0.0080	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	76%	51%	90%	50-150%
	13C5-PFPeA	56%	41% [d]	73%	50-150%
	13C5-PFHxA	54%	38% [d]	70%	50-150%
	13C4-PFHpA	65%	42% [d]	78%	50-150%
	13C8-PFOA	78%	49% [d]	90%	50-150%
	13C9-PFNA	68%	41% [d]	81%	50-150%
	13C6-PFDA	75%	40% [d]	88%	50-150%
	13C7-PFUnDA	70%	44% [d]	87%	50-150%
	13C2-PFDoDA	57%	34% [d]	75%	50-150%
	13C2-PFTeDA	29% [d]	17% [d]	37% [d]	50-150%
	13C3-PFBS	58%	42% [d]	77%	50-150%
	13C3-PFHxS	74%	50%	92%	50-150%
	13C8-PFOS	64%	42% [d]	81%	50-150%
	13C8-FOSA	24% [d]	30% [d]	52%	50-150%
	d3-MeFOSAA	87%	52%	100%	50-150%
	d5-EtFOSAA	68%	42% [d]	80%	50-150%
	13C2-4:2FTS	59%	45% [d]	79%	50-150%
	13C2-6:2FTS	93%	63%	113%	50-150%
	13C2-8:2FTS	72%	53%	89%	50-150%
	13C3-HFPO-DA	48% [d]	33% [d]	60%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0009-000.0-20220615
Lab Sample ID: FA96630-5
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62816.D	1	07/16/22 04:25	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62440.D	1	07/07/22 12:04	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0351	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0508	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0430	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0401	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0159	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0128	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0174	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.176	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.317	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0122	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0009-000.0-20220615		
Lab Sample ID:	FA96630-5	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%	52%	50-150%
	13C5-PFPeA	49% [c]	39% [c]	50-150%
	13C5-PFHxA	50%	38% [c]	50-150%
	13C4-PFHpA	63%	45% [c]	50-150%
	13C8-PFOA	76%	56%	50-150%
	13C9-PFNA	63%	50%	50-150%
	13C6-PFDA	65%	53%	50-150%
	13C7-PFUnDA	67%	60%	50-150%
	13C2-PFDoDA	52%	51%	50-150%
	13C2-PFTeDA	26% [c]	27% [c]	50-150%
	13C3-PFBS	52%	41% [c]	50-150%
	13C3-PFHxS	70%	53%	50-150%
	13C8-PFOS	58%	50%	50-150%
	13C8-FOSA	26% [c]	33% [c]	50-150%
	d3-MeFOSAA	84%	72%	50-150%
	d5-EtFOSAA	65%	62%	50-150%
	13C2-4:2FTS	54%	44% [c]	50-150%
	13C2-6:2FTS	90%	68%	50-150%
	13C2-8:2FTS	74%	61%	50-150%
	13C3-HFPO-DA	44% [c]	31% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-SW0010-000.0-20220615
Lab Sample ID: FA96630-6
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62817.D	1	07/16/22 04:44	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62441.D	1	07/07/22 12:23	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0362	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0286	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0248	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0269	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0133	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0087	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0118	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0937	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0047	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.211	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0097	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0010-000.0-20220615		
Lab Sample ID:	FA96630-6	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%	43% [c]	50-150%
	13C5-PFPeA	48% [c]	31% [c]	50-150%
	13C5-PFHxA	48% [c]	30% [c]	50-150%
	13C4-PFHpA	65%	37% [c]	50-150%
	13C8-PFOA	79%	47% [c]	50-150%
	13C9-PFNA	65%	41% [c]	50-150%
	13C6-PFDA	74%	46% [c]	50-150%
	13C7-PFUnDA	81%	52%	50-150%
	13C2-PFDoDA	63%	43% [c]	50-150%
	13C2-PFTeDA	32% [c]	23% [c]	50-150%
	13C3-PFBS	50%	33% [c]	50-150%
	13C3-PFHxS	76%	47% [c]	50-150%
	13C8-PFOS	64%	42% [c]	50-150%
	13C8-FOSA	25% [c]	24% [c]	50-150%
	d3-MeFOSAA	103%	65%	50-150%
	d5-EtFOSAA	78%	55%	50-150%
	13C2-4:2FTS	50%	34% [c]	50-150%
	13C2-6:2FTS	96%	59%	50-150%
	13C2-8:2FTS	86%	54%	50-150%
	13C3-HFPO-DA	43% [c]	24% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0011-000.0-20220615		
Lab Sample ID:	FA96630-7	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62818.D	1	07/16/22 05:02	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62442.D	1	07/07/22 12:41	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0241	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0164	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0121	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0136	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0079	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0056	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0392	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0767	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0058	0.016	0.0080	0.0040	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-SW0011-000.0-20220615		
Lab Sample ID:	FA96630-7	**Date Sampled:**	06/15/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%	46% [c]	50-150%
	13C5-PFPeA	49% [c]	32% [c]	50-150%
	13C5-PFHxA	50%	32% [c]	50-150%
	13C4-PFHpA	69%	39% [c]	50-150%
	13C8-PFOA	87%	50%	50-150%
	13C9-PFNA	72%	44% [c]	50-150%
	13C6-PFDA	83%	48% [c]	50-150%
	13C7-PFUnDA	89%	56%	50-150%
	13C2-PFDoDA	71%	48% [c]	50-150%
	13C2-PFTeDA	39% [c]	29% [c]	50-150%
	13C3-PFBS	53%	34% [c]	50-150%
	13C3-PFHxS	84%	49% [c]	50-150%
	13C8-PFOS	71%	45% [c]	50-150%
	13C8-FOSA	26% [c]	29% [c]	50-150%
	d3-MeFOSAA	115%	70%	50-150%
	d5-EtFOSAA	88%	56%	50-150%
	13C2-4:2FTS	53%	37% [c]	50-150%
	13C2-6:2FTS	106%	62%	50-150%
	13C2-8:2FTS	96%	57%	50-150%
	13C3-HFPO-DA	45% [c]	26% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220615-01
Lab Sample ID: FA96630-8
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62443.D	1	07/07/22 13:00	NG	06/29/22 10:05	OP91875	S3Q851
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220615-01
Lab Sample ID: FA96630-8 **Date Sampled:** 06/15/22
Matrix: AQ - Field Blank Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	70%		50-150%
	13C9-PFNA	63%		50-150%
	13C6-PFDA	56%		50-150%
	13C7-PFUnDA	58%		50-150%
	13C2-PFDoDA	54%		50-150%
	13C2-PFTeDA	53%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	57%		50-150%
	13C8-FOSA	59%		50-150%
	d3-MeFOSAA	63%		50-150%
	d5-EtFOSAA	60%		50-150%
	13C2-4:2FTS	63%		50-150%
	13C2-6:2FTS	70%		50-150%
	13C2-8:2FTS	59%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220615-01
Lab Sample ID: FA96630-9
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/15/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62444.D	1	07/07/22 13:18	NG	06/29/22 10:05	OP91875	S3Q851
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-EB-20220615-01		
Lab Sample ID:	FA96630-9	**Date Sampled:**	06/15/22
Matrix:	AQ - Equipment Blank	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	62%		50-150%
	13C4-PFHpA	62%		50-150%
	13C8-PFOA	67%		50-150%
	13C9-PFNA	62%		50-150%
	13C6-PFDA	58%		50-150%
	13C7-PFUnDA	60%		50-150%
	13C2-PFDoDA	55%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	62%		50-150%
	13C3-PFHxS	62%		50-150%
	13C8-PFOS	57%		50-150%
	13C8-FOSA	60%		50-150%
	d3-MeFOSAA	65%		50-150%
	d5-EtFOSAA	61%		50-150%
	13C2-4:2FTS	59%		50-150%
	13C2-6:2FTS	65%		50-150%
	13C2-8:2FTS	64%		50-150%
	13C3-HFPO-DA	53%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96630

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS _ ORLANDO JOB #: PAGE 1 OF 1

SGS - ORLANDO Quote: SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway STE. 203
City: Merritt Island State: FL Zip: 32953
Project Contact: Denise Rivers Email: drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: William Duttenhaver Sampler 2: Dustin Lupis

Project Information

Project Name : SWMU S014
Street: A Avenue
City: Kennedy Space Center State: FL
Project #: NS1010.01.13
Fax #:
Client Purchase Order #:

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL - 24 Analytes + GEN X	LAB USE ONLY
1	S014 - SW0006 - 000.0 - 20220615	6/15/22	8:25	WD	SW	2	X								X	
2	S014 - FD - 20220615 - 01	6/15/22	8:25	WD	SW	2	X								X	
3	S014 - SW0007 - 000.0 - 20220615	6/15/22	8:50	WD	SW	2	X								X	
4	S014 - SW0008 - 000.0 - 20220615	6/15/22	9:00	WD	SW	2	X								X	
5	S014 - SW0009 - 000.0 - 20220615	6/15/22	9:20	WD	SW	2	X								X	
6	S014 - SW0010 - 000.0 - 20220615	6/15/22	9:35	WD	SW	2	X								X	
7	S014 - SW0011 - 000.0 - 20220615	6/15/22	9:50	WD	SW	2	X								X	
8	S014 - FB - 20220615 - 01	6/15/22	9:55	WD	WW	2	X								X	
9	S014 - EB - 20220615 - 01	6/15/22	10:00	WD	WW	2	X								X	

Turnaround Time (Business days)

Std. 10 Business Days
7 Day *RUSH*
5 Day *RUSH*
3 Day *EMERGENCY*
2 Day *EMERGENCY*
1 Day *EMERGENCY*
Other
Approved By: / Date/Rush Code:
Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT NG
LABEL VERIFICATION TW

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	6-17-22/1535	2 6/17/22 1535	3 6/17/2022 1840		4 6/17/22 1640
Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Custody Seal In Place: Y N Temp Blank Provided: Y N Preserved Where Applicable: Y N Total # of Coolers: ____ Cooler Temperature (s) Celsius: 3.2C, 1.8C, 4.6C IR1

5.1 5

FA96630: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96630 **Client:** HGL, INC. **Project:** SWMU S014

Date / Time Received: 6/17/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8); Cooler 3: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (5.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/17/2022 4:40:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875	EPA 537M QSM5.3 B-15						
OP91875-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	108	%	73-129
OP91875-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	114	%	72-129
OP91875-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	112	%	72-129
OP91875-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	110	%	72-130
OP91875-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	112	%	71-133
OP91875-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP91875-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	110	%	71-129
OP91875-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	106	%	69-133
OP91875-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	110	%	72-134
OP91875-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	114	%	65-144
OP91875-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	113	%	71-132
OP91875-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	112	%	72-130
OP91875-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	110	%	71-127
OP91875-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	112	%	68-131
OP91875-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	123	%	69-134
OP91875-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	113	%	65-140
OP91875-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	108	%	69-127
OP91875-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	106	%	53-142
OP91875-BS	754-91-6	PFOSA	BSP	REC	112	%	67-137
OP91875-BS	2355-31-9	MeFOSAA	BSP	REC	115	%	65-136
OP91875-BS	2991-50-6	EtFOSAA	BSP	REC	110	%	61-135
OP91875-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	112	%	63-143
OP91875-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP91875-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	110	%	67-138
OP91875-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	98	%	73-129
OP91875-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	72-129
OP91875-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	99	%	72-129
OP91875-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	102	%	72-130
OP91875-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	109	%	71-133
OP91875-MS*	375-95-1	Perfluorononanoic acid	MS	REC	110	%	69-130
OP91875-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	108	%	71-129
OP91875-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	101	%	69-133
OP91875-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	101	%	72-134
OP91875-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	92	%	65-144
OP91875-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	99	%	71-132
OP91875-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	102	%	72-130
OP91875-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	95	%	71-127
OP91875-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	107	%	68-131
OP91875-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	128	%	69-134
OP91875-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	108	%	65-140
OP91875-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	103	%	69-127
OP91875-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	111	%	53-142

* Sample used for QC is not from job FA96630

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875-MS*	754-91-6	PFOSA	MS	REC	106	%	67-137
OP91875-MS*	2355-31-9	MeFOSAA	MS	REC	109	%	65-136
OP91875-MS*	2991-50-6	EtFOSAA	MS	REC	109	%	61-135
OP91875-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	106	%	63-143
OP91875-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	84	%	64-140
OP91875-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	109	%	67-138
OP91875-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP91875-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	105	%	72-129
OP91875-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	103	%	72-129
OP91875-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	108	%	72-130
OP91875-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	5	%	30
OP91875-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	120	%	71-133
OP91875-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	8	%	30
OP91875-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	126	%	69-130
OP91875-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	13	%	30
OP91875-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	119	%	71-129
OP91875-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	10	%	30
OP91875-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	113	%	69-133
OP91875-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	11	%	30
OP91875-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	109	%	72-134
OP91875-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	8	%	30
OP91875-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	94	%	65-144
OP91875-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP91875-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	103	%	71-132
OP91875-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	4	%	30
OP91875-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	105	%	72-130
OP91875-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP91875-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	97	%	71-127
OP91875-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP91875-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	122	%	68-131
OP91875-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP91875-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	142	%	69-134
OP91875-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	10	%	30
OP91875-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	130	%	65-140
OP91875-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	11	%	30
OP91875-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	115	%	69-127
OP91875-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	11	%	30
OP91875-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	132	%	53-142
OP91875-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	17	%	30
OP91875-MSD*	754-91-6	PFOSA	MSD	REC	116	%	67-137
OP91875-MSD*	754-91-6	PFOSA	MSD	RPD	10	%	30
OP91875-MSD*	2355-31-9	MeFOSAA	MSD	REC	121	%	65-136

* Sample used for QC is not from job FA96630

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96630
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875-MSD*	2355-31-9	MeFOSAA	MSD	RPD	10	%	30
OP91875-MSD*	2991-50-6	EtFOSAA	MSD	REC	107	%	61-135
OP91875-MSD*	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP91875-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	107	%	63-143
OP91875-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91875-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	107	%	64-140
OP91875-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	9	%	30
OP91875-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	123	%	67-138
OP91875-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	12	%	30
OP91991	EPA 537M QSM5.3 B-15						
OP91991-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	109	%	73-129
OP91991-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	115	%	72-129
OP91991-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	111	%	72-129
OP91991-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	112	%	72-130
OP91991-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	113	%	71-133
OP91991-BS	375-95-1	Perfluorononanoic acid	BSP	REC	112	%	69-130
OP91991-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	113	%	71-129
OP91991-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	109	%	69-133
OP91991-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	111	%	72-134
OP91991-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	111	%	65-144
OP91991-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	116	%	71-132
OP91991-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	113	%	72-130
OP91991-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP91991-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	115	%	68-131
OP91991-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	116	%	69-134
OP91991-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	114	%	65-140
OP91991-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	115	%	69-127
OP91991-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	99	%	53-142
OP91991-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP91991-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP91991-BS	2991-50-6	EtFOSAA	BSP	REC	114	%	61-135
OP91991-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	116	%	63-143
OP91991-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	113	%	64-140
OP91991-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	115	%	67-138

* Sample used for QC is not from job FA96630

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q851-IBLK	3Q62387.D	1	07/06/22	NG	n/a	n/a	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	88%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q851-IBLK	3Q62387.D	1	07/06/22	NG	n/a	n/a	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	98%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	81%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-5, FA96630-6, FA96630-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	92%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-5, FA96630-6, FA96630-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	100%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-5, FA96630-6, FA96630-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-5, FA96630-6, FA96630-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	101%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	85%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q859-IBLK	3Q63017.D	1	07/19/22	MV	n/a	n/a	S3Q859

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-3, FA96630-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	89%	50-150%

Instrument Blank

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q859-IBLK	3Q63017.D	1	07/19/22	MV	n/a	n/a	S3Q859

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-3, FA96630-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSA	94%	50-150%
	d3-MeFOSAA	96%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	89%	50-150%

Method Blank Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MB	3Q62418.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	75%	50-150%
	13C5-PFPeA	74%	50-150%
	13C5-PFHxA	74%	50-150%
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	74%	50-150%
	13C6-PFDA	72%	50-150%

Method Blank Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MB	3Q62418.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	68%	50-150%
	13C2-PFTeDA	56%	50-150%
	13C3-PFBS	74%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	72%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSA	33%*	50-150%
	d3-MeFOSAA	83%	50-150%
	d5-EtFOSAA	77%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	72%	50-150%
	13C3-HFPO-DA	62%	50-150%

Method Blank Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	84%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	91%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	96%	50-150%

Blank Spike Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-BS	3Q62417.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0860	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0915	114	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0892	112	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0879	110	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0894	112	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0901	113	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0878	110	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0847	106	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0876	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0908	114	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0902	113	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0892	112	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0876	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0895	112	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0980	123	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0900	113	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0865	108	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0850	106	53-142
754-91-6	PFOSA	0.08	0.0893	112	67-137
2355-31-9	MeFOSAA	0.08	0.0922	115	65-136
2991-50-6	EtFOSAA	0.08	0.0883	110	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0893	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0870	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0878	110	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0985	123	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	84%	50-150%
	13C5-PFPeA	83%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-BS	3Q62417.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	79%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSA	22%*	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	70%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.174	109	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.184	115	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.178	111	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.179	112	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.179	112	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.180	113	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.174	109	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.177	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.178	111	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.186	116	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.181	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.178	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.184	115	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.186	116	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.183	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.184	115	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.159	99	53-142
754-91-6	PFOSA	0.16	0.174	109	67-137
2355-31-9	MeFOSAA	0.16	0.175	109	65-136
2991-50-6	EtFOSAA	0.16	0.182	114	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.185	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.181	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.184	115	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.167	104	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	50-150%
	13C5-PFPeA	119%	50-150%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	119%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	106%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-1, FA96630-2, FA96630-3, FA96630-4, FA96630-5, FA96630-6, FA96630-7

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	119%	50-150%
	13C3-PFHxS	119%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	120%	50-150%
	13C2-6:2FTS	121%	50-150%
	13C2-8:2FTS	133%	50-150%
	13C3-HFPO-DA	116%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MS	3Q62420.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
OP91875-MSD	3Q62421.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
FA96602-1	3Q62419.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	Compound	FA96602-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0260		0.167	0.189	98	0.167	0.194	101	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0960		0.167	0.263	100	0.167	0.271	105	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0719		0.167	0.237	99	0.167	0.243	103	3	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0306		0.167	0.200	102	0.167	0.210	108	5	72-130/30
335-67-1	Perfluorooctanoic acid	0.0246		0.167	0.206	109	0.167	0.224	120	8	71-133/30
375-95-1	Perfluorononanoic acid	0.0142		0.167	0.197	110	0.167	0.224	126	13	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.180	108	0.167	0.198	119	10	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.169	101	0.167	0.189	113	11	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.168	101	0.167	0.182	109	8	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.153	92	0.167	0.156	94	2	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.165	99	0.167	0.171	103	4	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0103		0.167	0.180	102	0.167	0.185	105	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0123		0.167	0.171	95	0.167	0.174	97	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0712		0.167	0.249	107	0.167	0.274	122	10	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0071	J	0.167	0.220	128	0.167	0.244	142*	10	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.125		0.167	0.305	108	0.167	0.342	130	11	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.171	103	0.167	0.191	115	11	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.185	111	0.167	0.220	132	17	53-142/30
754-91-6	PFOSA	0.0083	U	0.167	0.176	106	0.167	0.194	116	10	67-137/30
2355-31-9	MeFOSAA	0.017	U	0.167	0.182	109	0.167	0.201	121	10	65-136/30
2991-50-6	EtFOSAA	0.017	U	0.167	0.182	109	0.167	0.179	107	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.177	106	0.167	0.178	107	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.257		0.167	0.397	84	0.167	0.435	107	9	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.182	109	0.167	0.205	123	12	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.193	116	0.167	0.190	114	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96602-1	Limits
	13C4-PFBA	63%	69%	61%	50-150%
	13C5-PFPeA	63%	69%	61%	50-150%
	13C5-PFHxA	63%	69%	62%	50-150%
	13C4-PFHpA	61%	64%	63%	50-150%
	13C8-PFOA	57%	55%	64%	50-150%
	13C9-PFNA	49%* [a]	42%* [a]	57%	50-150%
	13C6-PFDA	42%* [a]	37%* [a]	51%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96630
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MS	3Q62420.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
OP91875-MSD	3Q62421.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
FA96602-1	3Q62419.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96630-8, FA96630-9

CAS No.	ID Standard Recoveries	MS	MSD	FA96602-1	Limits
	13C7-PFUnDA	45%* [a]	39%* [a]	53%	50-150%
	13C2-PFDoDA	45%* [a]	40%* [a]	51%	50-150%
	13C2-PFTeDA	49%* [a]	49%* [a]	52%	50-150%
	13C3-PFBS	64%	69%	62%	50-150%
	13C3-PFHxS	55%	52%	61%	50-150%
	13C8-PFOS	45%* [a]	40%* [a]	52%	50-150%
	13C8-FOSA	49%* [a]	45%* [a]		50-150%
	d3-MeFOSAA	47%* [a]	41%* [a]	57%	50-150%
	d5-EtFOSAA	45%* [a]	39%* [a]	56%	50-150%
	13C2-4:2FTS	62%	69%	58%	50-150%
	13C2-6:2FTS	64%	63%	68%	50-150%
	13C2-8:2FTS	45%* [a]	38%* [a]	52%	50-150%
	13C3-HFPO-DA			54%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA96631

Sampling Date: 06/17/22



Report to:

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Total number of pages in report: **133**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Sample Summary

Hydrogeologic, Inc.

Job No: FA96631

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96631-1	06/17/22	07:57	JB	06/17/22	AQ	Ground Water	S014-DPT1016-005.0-20220617
FA96631-2	06/17/22	08:11	JB	06/17/22	AQ	Ground Water	S014-DPT1016-015.0-20220617
FA96631-3	06/17/22	08:24	JB	06/17/22	AQ	Ground Water	S014-DPT1016-025.0-20220617
FA96631-4	06/17/22	08:40	JB	06/17/22	AQ	Ground Water	S014-DPT1016-035.0-20220617
FA96631-5	06/17/22	08:57	JB	06/17/22	AQ	Ground Water	S014-DPT1016-045.0-20220617
FA96631-6	06/17/22	09:39	JB	06/17/22	AQ	Ground Water	S014-DPT1017-005.0-20220617
FA96631-7	06/17/22	09:51	JB	06/17/22	AQ	Ground Water	S014-DPT1017-015.0-20220617
FA96631-8	06/17/22	10:07	JB	06/17/22	AQ	Ground Water	S014-DPT1017-025.0-20220617
FA96631-9	06/17/22	10:24	JB	06/17/22	AQ	Ground Water	S014-DPT1017-035.0-20220617
FA96631-10	06/17/22	10:24	JB	06/17/22	AQ	Ground Water	S014-FD-20220617-01
FA96631-11	06/17/22	10:44	JB	06/17/22	AQ	Ground Water	S014-DPT1017-045.0-20220617
FA96631-12	06/17/22	11:45	JB	06/17/22	AQ	Ground Water	S014-DPT1018-005.0-20220617
FA96631-13	06/17/22	12:01	JB	06/17/22	AQ	Ground Water	S014-DPT1018-015.0-20220617

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA96631

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96631-14	06/17/22	12:13	JB	06/17/22	AQ	Ground Water	S014-DPT1018-025.0-20220617
FA96631-15	06/17/22	12:31	JB	06/17/22	AQ	Ground Water	S014-DPT1018-035.0-20220617
FA96631-16	06/17/22	12:49	JB	06/17/22	AQ	Ground Water	S014-DPT1018-045.0-20220617
FA96631-17	06/17/22	13:31	JB	06/17/22	AQ	Ground Water	S014-DPT1019-005.0-20220617
FA96631-18	06/17/22	13:31	JB	06/17/22	AQ	Ground Water	S014-FD-20220617-02
FA96631-19	06/17/22	13:39	JB	06/17/22	AQ	Ground Water	S014-DPT1019-015.0-20220617
FA96631-20	06/17/22	13:48	JB	06/17/22	AQ	Ground Water	S014-DPT1019-025.0-20220617
FA96631-21	06/17/22	14:02	JB	06/17/22	AQ	Ground Water	S014-DPT1019-035.0-20220617
FA96631-22	06/17/22	14:16	JB	06/17/22	AQ	Ground Water	S014-DPT1019-045.0-20220617
FA96631-23	06/17/22	14:40	JB	06/17/22	AQ	Equipment Blank	S014-EB-20220617-01
FA96631-24	06/17/22	14:45	JB	06/17/22	AQ	Field Blank Water	S014-FB-20220617-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96631

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 7/25/2022 2:10:02 PM

On 06/17/2022, 23 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96631 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91876

Sample(s) FA96626-3MS, FA96626-3MSD were used as the QC samples indicated.

Sample(s) FA96631-1, FA96631-2, FA96631-3, FA96631-4 have surrogates outside control limits.

FA96631-1: Confirmation run.

FA96631-2: Confirmation run.

FA96631-3 for 13C2-PFDoDA: Outside control limits.

FA96631-3 for 13C2-PFTeDA: Outside control limits.

FA96631-3: Dilution required due to matrix interference (ID recovery standard failure).

FA96631-4 for 13C2-4:2FTS: Outside control limits.

FA96631-4 for 13C3-HFPO-DA: Outside control limits.

FA96631-4 for 13C4-PFBA: Outside control limits.

FA96631-4 for 13C4-PFHpA: Outside control limits.

FA96631-4 for 13C5-PFHxA: Outside control limits.

FA96631-4 for 13C5-PFPeA: Outside control limits.

FA96631-4: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP91896

Sample(s) FA96631-5MS, FA96631-6DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoropentanoic acid are outside control limits for sample OP91896-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19, FA96631-6, FA96631-8, FA96631-9 have surrogates outside control limits.

FA96631-6 for 13C3-HFPO-DA: Outside control limits.

FA96631-6 for 13C4-PFBA: Outside control limits.

FA96631-6: Dilution required due to matrix interference (ID recovery standard failure).

FA96631-8 for 13C2-PFTeDA: Outside control limits.

FA96631-8 for 13C3-HFPO-DA: Outside control limits.

FA96631-8 for 13C8-FOSA: Outside control limits.

FA96631-8: Dilution required due to matrix interference (ID recovery standard failure).

FA96631-9 for 13C2-4:2FTS: Outside control limits.

FA96631-9 for 13C2-PFTeDA: Outside control limits.

FA96631-9 for 13C3-HFPO-DA: Outside control limits.

FA96631-9 for 13C3-PFBS: Outside control limits.

FA96631-9 for 13C4-PFBA: Outside control limits.

FA96631-9 for 13C5-PFHxA: Outside control limits.

FA96631-9 for 13C5-PFPeA: Outside control limits.

FA96631-9: Dilution required due to matrix interference (ID recovery standard failure).

FA96631-12 for 13C2-PFTeDA: Outside control limits.

FA96631-12 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference.

FA96631-12: Dilution required due to matrix interference (ID recovery standard failure).

FA96631-13 for 13C2-4:2FTS: Outside control limits.

FA96631-13 for 13C2-PFTeDA: Outside control limits.

FA96631-13 for 13C3-HFPO-DA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91896

FA96631-13 for 13C3-PFBS: Outside control limits.
FA96631-13 for 13C4-PFBA: Outside control limits.
FA96631-13 for 13C5-PFHxA: Outside control limits.
FA96631-13 for 13C5-PFPeA: Outside control limits.
FA96631-13 for HFPO-DA (GenX): Associated ID Standard outside control limits due to matrix interference.
FA96631-13 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FA96631-13 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FA96631-13 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FA96631-13: Dilution required due to matrix interference (ID recovery standard failure).
FA96631-14 for 13C2-4:2FTS: Outside control limits.
FA96631-14 for 13C3-HFPO-DA: Outside control limits.
FA96631-14 for 13C3-PFBS: Outside control limits.
FA96631-14 for 13C4-PFBA: Outside control limits.
FA96631-14 for 13C5-PFHxA: Outside control limits.
FA96631-14 for 13C5-PFPeA: Outside control limits.
FA96631-14 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FA96631-14 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FA96631-14 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FA96631-14: Dilution required due to matrix interference (ID recovery standard failure).
FA96631-16 for 13C2-4:2FTS: Outside control limits.
FA96631-16 for 13C3-HFPO-DA: Outside control limits.
FA96631-16 for 13C3-PFBS: Outside control limits.
FA96631-16 for 13C4-PFBA: Outside control limits.
FA96631-16 for 13C5-PFHxA: Outside control limits.
FA96631-16 for 13C5-PFPeA: Outside control limits.
FA96631-16 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FA96631-16 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FA96631-16 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FA96631-16: Dilution required due to matrix interference (ID recovery standard failure).
FA96631-17 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
FA96631-17 for 13C2-4:2FTS: Outside control limits.
FA96631-17 for 13C2-PFTeDA: Outside control limits.
FA96631-17 for 13C3-HFPO-DA: Outside control limits.
FA96631-17 for 13C3-PFBS: Outside control limits.
FA96631-17 for 13C4-PFBA: Outside control limits.
FA96631-17 for 13C4-PFHpA: Outside control limits.
FA96631-17 for 13C5-PFHxA: Outside control limits.
FA96631-17 for 13C5-PFPeA: Outside control limits.
FA96631-17 for 13C8-FOSA: Outside control limits.
FA96631-17: Dilution required due to matrix interference (ID recovery standard failure).
FA96631-18 for 13C2-4:2FTS: Outside control limits.
FA96631-18 for 13C2-PFTeDA: Outside control limits.
FA96631-18 for 13C3-HFPO-DA: Outside control limits.
FA96631-18 for 13C3-PFBS: Outside control limits.
FA96631-18 for 13C4-PFBA: Outside control limits.
FA96631-18 for 13C4-PFHpA: Outside control limits.
FA96631-18 for 13C5-PFHxA: Outside control limits.
FA96631-18 for 13C5-PFPeA: Outside control limits.
FA96631-18 for 13C8-FOSA: Outside control limits.
FA96631-18 for HFPO-DA (GenX): Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
FA96631-18: Dilution required due to matrix interference (ID recovery standard failure).
FA96631-19 for 13C2-4:2FTS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91896

FA96631-19 for 13C3-HFPO-DA: Outside control limits.
FA96631-19 for 13C3-PFBS: Outside control limits.
FA96631-19 for 13C4-PFBA: Outside control limits.
FA96631-19 for 13C5-PFHxA: Outside control limits.
FA96631-19 for 13C5-PFPeA: Outside control limits.
FA96631-19 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FA96631-19 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FA96631-19 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FA96631-19: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP91898

Sample(s) FA96631-21MS, FA96631-22DUP were used as the QC samples indicated.
Blank Spike Recovery(s) for Perfluorohexanoic acid are outside control limits.
Sample(s) FA96631-20, FA96631-21, FA96631-22 have surrogates outside control limits.
OP91898-BS for 13C3-PFHxS: Outside control limits.
OP91898-BS for 13C8-PFOA: Outside control limits.
OP91898-BS for d3-MeFOSAA: Outside control limits.
FA96631-20 for 13C8-FOSA: Outside control limits.
FA96631-20 for PFOSA: Associated ID Standard outside control limits.
FA96631-20: Confirmation run.
FA96631-21 for PFOSA: Associated ID Standard outside control limits, Confirmed by batch QC.
FA96631-21: Confirmation run.
FA96631-21: Insufficient sample for re-extraction.
FA96631-22: Confirmation run.
FA96631-23: Confirmation run.

Matrix: AQ **Batch ID:** OP91991

Sample(s) FA96631-17, FA96631-18 have surrogates outside control limits.
FA96631-17: Confirmation run.
FA96631-18: Confirmation run.

Matrix: AQ **Batch ID:** OP92012

Sample(s) FA96631-1, FA96631-2, FA96631-20 have surrogates outside control limits.
FA96631-1 for 13C2-PFTeDA: Outside control limits.
FA96631-1 for 13C3-HFPO-DA: Outside control limits.
FA96631-1 for 13C8-FOSA: Outside control limits.
FA96631-1 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FA96631-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FA96631-1 for PFOSA: Associated ID Standard outside control limits.
FA96631-2 for 13C3-HFPO-DA: Outside control limits.
FA96631-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FA96631-20: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96631-1	**S014-DPT1016-005.0-20220617**					
Perfluorooctanesulfonic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96631-2	**S014-DPT1016-015.0-20220617**					
No hits reported in this sample.						
FA96631-3	**S014-DPT1016-025.0-20220617**					
Perfluorohexanesulfonic acid		0.0023 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96631-4	**S014-DPT1016-035.0-20220617**					
No hits reported in this sample.						
FA96631-5	**S014-DPT1016-045.0-20220617**					
No hits reported in this sample.						
FA96631-6	**S014-DPT1017-005.0-20220617**					
No hits reported in this sample.						
FA96631-7	**S014-DPT1017-015.0-20220617**					
No hits reported in this sample.						
FA96631-8	**S014-DPT1017-025.0-20220617**					
No hits reported in this sample.						
FA96631-9	**S014-DPT1017-035.0-20220617**					
No hits reported in this sample.						
FA96631-10	**S014-FD-20220617-01**					
No hits reported in this sample.						
FA96631-11	**S014-DPT1017-045.0-20220617**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96631-12	**S014-DPT1018-005.0-20220617**					
Perfluorobutanoic acid		0.0132 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0025 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0108	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
FA96631-13	**S014-DPT1018-015.0-20220617**					
Perfluorobutanoic acid [a]		0.0105 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0038 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0023 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0062 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0130	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
FA96631-14	**S014-DPT1018-025.0-20220617**					
Perfluorobutanoic acid [a]		0.0264	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0042 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0021 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0074 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0122	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0243	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96631-15	**S014-DPT1018-035.0-20220617**					
Perfluorobutanoic acid		0.0108 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0046 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0184	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0063 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0141	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96631-16	**S014-DPT1018-045.0-20220617**					
Perfluorobutanoic acid [a]		0.0049 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0037 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0063 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0159	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0206	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0196	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96631-17	**S014-DPT1019-005.0-20220617**					
Perfluorobutanoic acid [b]		0.0696 J	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
FA96631-18	**S014-FD-20220617-02**					
Perfluorobutanoic acid [b]		0.0713 J	0.095	0.048	ug/l	EPA 537M QSM5.3 B-15
FA96631-19	**S014-DPT1019-015.0-20220617**					
Perfluorobutanoic acid [a]		0.0252	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0060 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0101	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96631-20	**S014-DPT1019-025.0-20220617**					
Perfluoropentanoic acid		0.0120	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96631-21	**S014-DPT1019-035.0-20220617**					
No hits reported in this sample.						
FA96631-22	**S014-DPT1019-045.0-20220617**					
No hits reported in this sample.						
FA96631-23	**S014-EB-20220617-01**					
No hits reported in this sample.						
FA96631-24	**S014-FB-20220617-01**					
No hits reported in this sample.						

(a) Associated ID Standard outside control limits.
(b) Dilution required due to matrix interference (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S014-DPT1016-005.0-20220617
Lab Sample ID: FA96631-1 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95190.D	1	07/18/22 04:26	JB	07/11/22 09:20	OP92012	S2Q1329
Run #2 [a]	4Q30596.D	1	07/07/22 16:20	NG	06/29/22 09:20	OP91876	S4Q442

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	105 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1016-005.0-20220617		
Lab Sample ID:	FA96631-1	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	46% [c]	50-150%
	13C5-PFPeA	55%	41% [c]	50-150%
	13C5-PFHxA	60%	44% [c]	50-150%
	13C4-PFHpA	68%	49% [c]	50-150%
	13C8-PFOA	76%	70%	50-150%
	13C9-PFNA	77%	71%	50-150%
	13C6-PFDA	78%	62%	50-150%
	13C7-PFUnDA	75%	53%	50-150%
	13C2-PFDoDA	61%	51%	50-150%
	13C2-PFTeDA	29% [c]	30% [c]	50-150%
	13C3-PFBS	59%	49% [c]	50-150%
	13C3-PFHxS	80%	64%	50-150%
	13C8-PFOS	80%	79%	50-150%
	13C8-FOSA	45% [c]	58%	50-150%
	d3-MeFOSAA	68%	70%	50-150%
	d5-EtFOSAA	64%	69%	50-150%
	13C2-4:2FTS	62%	50%	50-150%
	13C2-6:2FTS	86%	69%	50-150%
	13C2-8:2FTS	84%	66%	50-150%
	13C3-HFPO-DA	47% [c]	33% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1016-015.0-20220617		
Lab Sample ID:	FA96631-2	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95191.D	1	07/18/22 04:42	JB	07/11/22 09:20	OP92012	S2Q1329
Run #2 [a]	4Q30598.D	1	07/07/22 16:53	NG	06/29/22 09:20	OP91876	S4Q442

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1016-015.0-20220617		
Lab Sample ID:	FA96631-2	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	39% [c]	50-150%
	13C5-PFPeA	52%	37% [c]	50-150%
	13C5-PFHxA	58%	39% [c]	50-150%
	13C4-PFHpA	67%	41% [c]	50-150%
	13C8-PFOA	75%	62%	50-150%
	13C9-PFNA	76%	62%	50-150%
	13C6-PFDA	75%	53%	50-150%
	13C7-PFUnDA	77%	47% [c]	50-150%
	13C2-PFDoDA	76%	52%	50-150%
	13C2-PFTeDA	64%	52%	50-150%
	13C3-PFBS	55%	45% [c]	50-150%
	13C3-PFHxS	70%	53%	50-150%
	13C8-PFOS	69%	65%	50-150%
	13C8-FOSA	65%	71%	50-150%
	d3-MeFOSAA	81%	67%	50-150%
	d5-EtFOSAA	75%	65%	50-150%
	13C2-4:2FTS	55%	43% [c]	50-150%
	13C2-6:2FTS	77%	56%	50-150%
	13C2-8:2FTS	76%	53%	50-150%
	13C3-HFPO-DA	46% [c]	33% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1016-025.0-20220617
Lab Sample ID: FA96631-3 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q30600.D	1	07/07/22 17:26	NG	06/29/22 09:20	OP91876	S4Q442
Run #2 [a]	4Q30601.D	5	07/07/22 17:43	NG	06/29/22 09:20	OP91876	S4Q442

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0023	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1016-025.0-20220617		
Lab Sample ID:	FA96631-3	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	74%	50-150%
	13C5-PFPeA	59%	69%	50-150%
	13C5-PFHxA	63%	69%	50-150%
	13C4-PFHpA	64%	71%	50-150%
	13C8-PFOA	94%	96%	50-150%
	13C9-PFNA	94%	95%	50-150%
	13C6-PFDA	79%	78%	50-150%
	13C7-PFUnDA	63%	70%	50-150%
	13C2-PFDoDA	47% [c]	78%	50-150%
	13C2-PFTeDA	6% [c]	95%	50-150%
	13C3-PFBS	69%	78%	50-150%
	13C3-PFHxS	79%	90%	50-150%
	13C8-PFOS	97%	97%	50-150%
	13C8-FOSA	60%	93%	50-150%
	d3-MeFOSAA	71%	99%	50-150%
	d5-EtFOSAA	54%	98%	50-150%
	13C2-4:2FTS	67%	71%	50-150%
	13C2-6:2FTS	89%	87%	50-150%
	13C2-8:2FTS	82%	80%	50-150%
	13C3-HFPO-DA	52%	58%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1016-035.0-20220617		
Lab Sample ID:	FA96631-4	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q30602.D	1	07/07/22 17:59	NG	06/29/22 09:20	OP91876	S4Q442
Run #2 [a]	4Q30603.D	5	07/07/22 18:16	NG	06/29/22 09:20	OP91876	S4Q442

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [b]	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1016-035.0-20220617
Lab Sample ID: FA96631-4 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [c]	61%	50-150%
	13C5-PFPeA	41% [c]	57%	50-150%
	13C5-PFHxA	43% [c]	56%	50-150%
	13C4-PFHpA	46% [c]	58%	50-150%
	13C8-PFOA	68%	80%	50-150%
	13C9-PFNA	70%	81%	50-150%
	13C6-PFDA	59%	66%	50-150%
	13C7-PFUnDA	51%	59%	50-150%
	13C2-PFDoDA	53%	62%	50-150%
	13C2-PFTeDA	56%	73%	50-150%
	13C3-PFBS	50%	70%	50-150%
	13C3-PFHxS	58%	74%	50-150%
	13C8-PFOS	72%	85%	50-150%
	13C8-FOSA	64%	81%	50-150%
	d3-MeFOSAA	77%	86%	50-150%
	d5-EtFOSAA	76%	78%	50-150%
	13C2-4:2FTS	47% [c]	61%	50-150%
	13C2-6:2FTS	62%	74%	50-150%
	13C2-8:2FTS	62%	69%	50-150%
	13C3-HFPO-DA	37% [c]	53%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1016-045.0-20220617
Lab Sample ID: FA96631-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94603.D	1	07/06/22 16:46	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1016-045.0-20220617
Lab Sample ID: FA96631-5 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	74%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	68%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	64%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	61%		50-150%
	d3-MeFOSAA	79%		50-150%
	d5-EtFOSAA	82%		50-150%
	13C2-4:2FTS	63%		50-150%
	13C2-6:2FTS	77%		50-150%
	13C2-8:2FTS	79%		50-150%
	13C3-HFPO-DA	60%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1017-005.0-20220617
Lab Sample ID: FA96631-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94606.D	1	07/06/22 17:36	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94607.D	5	07/06/22 17:52	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-005.0-20220617		
Lab Sample ID:	FA96631-6	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [c]	63%	50-150%
	13C5-PFPeA	50%	66%	50-150%
	13C5-PFHxA	53%	70%	50-150%
	13C4-PFHpA	60%	72%	50-150%
	13C8-PFOA	65%	75%	50-150%
	13C9-PFNA	65%	75%	50-150%
	13C6-PFDA	65%	73%	50-150%
	13C7-PFUnDA	62%	71%	50-150%
	13C2-PFDoDA	59%	69%	50-150%
	13C2-PFTeDA	53%	65%	50-150%
	13C3-PFBS	53%	71%	50-150%
	13C3-PFHxS	61%	78%	50-150%
	13C8-PFOS	62%	71%	50-150%
	13C8-FOSA	63%	75%	50-150%
	d3-MeFOSAA	61%	72%	50-150%
	d5-EtFOSAA	62%	72%	50-150%
	13C2-4:2FTS	52%	67%	50-150%
	13C2-6:2FTS	64%	71%	50-150%
	13C2-8:2FTS	60%	66%	50-150%
	13C3-HFPO-DA	49% [c]	66%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1017-015.0-20220617
Lab Sample ID: FA96631-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94609.D	1	07/06/22 18:25	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1017-015.0-20220617
Lab Sample ID: FA96631-7 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	59%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	65%		50-150%
	13C8-PFOA	71%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	69%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	61%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	63%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	68%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	68%		50-150%
	d5-EtFOSAA	70%		50-150%
	13C2-4:2FTS	61%		50-150%
	13C2-6:2FTS	72%		50-150%
	13C2-8:2FTS	73%		50-150%
	13C3-HFPO-DA	55%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-025.0-20220617		
Lab Sample ID:	FA96631-8	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94613.D	1	07/06/22 19:32	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94614.D	5	07/06/22 19:48	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-025.0-20220617		
Lab Sample ID:	FA96631-8	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	68%	50-150%
	13C5-PFPeA	53%	67%	50-150%
	13C5-PFHxA	54%	68%	50-150%
	13C4-PFHpA	59%	70%	50-150%
	13C8-PFOA	63%	73%	50-150%
	13C9-PFNA	64%	72%	50-150%
	13C6-PFDA	63%	73%	50-150%
	13C7-PFUnDA	60%	70%	50-150%
	13C2-PFDoDA	58%	67%	50-150%
	13C2-PFTeDA	44% [c]	61%	50-150%
	13C3-PFBS	54%	69%	50-150%
	13C3-PFHxS	61%	71%	50-150%
	13C8-PFOS	63%	72%	50-150%
	13C8-FOSA	48% [c]	59%	50-150%
	d3-MeFOSAA	62%	70%	50-150%
	d5-EtFOSAA	63%	73%	50-150%
	13C2-4:2FTS	53%	65%	50-150%
	13C2-6:2FTS	64%	70%	50-150%
	13C2-8:2FTS	66%	68%	50-150%
	13C3-HFPO-DA	48% [c]	67%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-035.0-20220617		
Lab Sample ID:	FA96631-9	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94615.D	1	07/06/22 20:05	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94616.D	5	07/06/22 20:21	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [b]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1017-035.0-20220617
Lab Sample ID: FA96631-9 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [c]	59%	50-150%
	13C5-PFPeA	47% [c]	58%	50-150%
	13C5-PFHxA	48% [c]	59%	50-150%
	13C4-PFHpA	52%	61%	50-150%
	13C8-PFOA	56%	63%	50-150%
	13C9-PFNA	57%	64%	50-150%
	13C6-PFDA	57%	63%	50-150%
	13C7-PFUnDA	55%	62%	50-150%
	13C2-PFDoDA	52%	59%	50-150%
	13C2-PFTeDA	44% [c]	57%	50-150%
	13C3-PFBS	48% [c]	59%	50-150%
	13C3-PFHxS	54%	68%	50-150%
	13C8-PFOS	56%	66%	50-150%
	13C8-FOSA	53%	65%	50-150%
	d3-MeFOSAA	56%	64%	50-150%
	d5-EtFOSAA	58%	65%	50-150%
	13C2-4:2FTS	47% [c]	58%	50-150%
	13C2-6:2FTS	56%	62%	50-150%
	13C2-8:2FTS	56%	60%	50-150%
	13C3-HFPO-DA	42% [c]	54%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220617-01		
Lab Sample ID:	FA96631-10	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94617.D	1	07/06/22 20:38	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FD-20220617-01
Lab Sample ID: FA96631-10 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	62%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	71%		50-150%
	13C9-PFNA	71%		50-150%
	13C6-PFDA	71%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	57%		50-150%
	13C3-PFBS	62%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	71%		50-150%
	13C8-FOSA	69%		50-150%
	d3-MeFOSAA	67%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	61%		50-150%
	13C2-6:2FTS	73%		50-150%
	13C2-8:2FTS	70%		50-150%
	13C3-HFPO-DA	57%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-045.0-20220617		
Lab Sample ID:	FA96631-11	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94619.D	1	07/06/22 21:11	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1017-045.0-20220617		
Lab Sample ID:	FA96631-11	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	61%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	74%		50-150%
	13C6-PFDA	72%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	62%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	61%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	70%		50-150%
	13C8-FOSA	58%		50-150%
	d3-MeFOSAA	71%		50-150%
	d5-EtFOSAA	72%		50-150%
	13C2-4:2FTS	61%		50-150%
	13C2-6:2FTS	74%		50-150%
	13C2-8:2FTS	71%		50-150%
	13C3-HFPO-DA	54%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1018-005.0-20220617
Lab Sample ID: FA96631-12 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94621.D	1	07/06/22 21:44	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94622.D	5	07/06/22 22:01	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0132	0.018	0.0091	0.0045	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0025	0.0091	0.0045	0.0023	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.023 U [c]	0.045	0.023	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0108	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1018-005.0-20220617		
Lab Sample ID:	FA96631-12	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%	74%	50-150%
	13C5-PFPeA	60%	71%	50-150%
	13C5-PFHxA	63%	71%	50-150%
	13C4-PFHpA	66%	72%	50-150%
	13C8-PFOA	71%	75%	50-150%
	13C9-PFNA	72%	76%	50-150%
	13C6-PFDA	72%	71%	50-150%
	13C7-PFUnDA	68%	71%	50-150%
	13C2-PFDoDA	63%	65%	50-150%
	13C2-PFTeDA	42% d	47% d	50-150%
	13C3-PFBS	64%	77%	50-150%
	13C3-PFHxS	71%	77%	50-150%
	13C8-PFOS	70%	75%	50-150%
	13C8-FOSA	50%	60%	50-150%
	d3-MeFOSAA	69%	72%	50-150%
	d5-EtFOSAA	68%	71%	50-150%
	13C2-4:2FTS	66%	71%	50-150%
	13C2-6:2FTS	75%	78%	50-150%
	13C2-8:2FTS	70%	71%	50-150%
	13C3-HFPO-DA	54%	67%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits due to matrix interference.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1018-015.0-20220617
Lab Sample ID: FA96631-13 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94625.D	1	07/06/22 22:51	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94626.D	5	07/06/22 23:07	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0105	0.018	0.0091	0.0045	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0038	0.0091	0.0045	0.0023	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0023	0.0091	0.0045	0.0023	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.023 U [c]	0.045	0.023	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.023 U [c]	0.045	0.023	0.011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.023 U [c]	0.045	0.023	0.011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0062	0.0091	0.0045	0.0023	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0130	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.045 U [c]	0.091	0.045	0.023	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1018-015.0-20220617		
Lab Sample ID:	FA96631-13	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.045 U [c]	0.091	0.045	0.023	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [e]	58%	50-150%
	13C5-PFPeA	46% [e]	56%	50-150%
	13C5-PFHxA	49% [e]	57%	50-150%
	13C4-PFHpA	54%	59%	50-150%
	13C8-PFOA	59%	61%	50-150%
	13C9-PFNA	60%	60%	50-150%
	13C6-PFDA	60%	61%	50-150%
	13C7-PFUnDA	57%	59%	50-150%
	13C2-PFDoDA	56%	57%	50-150%
	13C2-PFTeDA	42% [e]	52%	50-150%
	13C3-PFBS	48% [e]	58%	50-150%
	13C3-PFHxS	56%	65%	50-150%
	13C8-PFOS	58%	64%	50-150%
	13C8-FOSA	55%	59%	50-150%
	d3-MeFOSAA	63%	63%	50-150%
	d5-EtFOSAA	64%	63%	50-150%
	13C2-4:2FTS	49% [e]	55%	50-150%
	13C2-6:2FTS	60%	60%	50-150%
	13C2-8:2FTS	63%	61%	50-150%
	13C3-HFPO-DA	44% [e]	49%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits due to matrix interference.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1018-025.0-20220617
Lab Sample ID: FA96631-14 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94627.D	1	07/06/22 23:24	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94628.D	5	07/06/22 23:40	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0264	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0042	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0021	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0074	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0122	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0243	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [c]	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1018-025.0-20220617
Lab Sample ID: FA96631-14 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [c]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	56%	50-150%
	13C5-PFPeA	42% [d]	54%	50-150%
	13C5-PFHxA	46% [d]	56%	50-150%
	13C4-PFHpA	53%	59%	50-150%
	13C8-PFOA	60%	63%	50-150%
	13C9-PFNA	62%	63%	50-150%
	13C6-PFDA	62%	63%	50-150%
	13C7-PFUnDA	60%	60%	50-150%
	13C2-PFDoDA	58%	58%	50-150%
	13C2-PFTeDA	54%	57%	50-150%
	13C3-PFBS	45% [d]	56%	50-150%
	13C3-PFHxS	56%	60%	50-150%
	13C8-PFOS	62%	60%	50-150%
	13C8-FOSA	61%	67%	50-150%
	d3-MeFOSAA	66%	64%	50-150%
	d5-EtFOSAA	66%	65%	50-150%
	13C2-4:2FTS	45% [d]	55%	50-150%
	13C2-6:2FTS	61%	61%	50-150%
	13C2-8:2FTS	64%	61%	50-150%
	13C3-HFPO-DA	39% [d]	51%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1018-035.0-20220617
Lab Sample ID: FA96631-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62819.D	1	07/16/22 05:21	MV	07/08/22 09:55	OP91991	S3Q857
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0108	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0046	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0184	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0063	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0141	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1018-035.0-20220617		
Lab Sample ID:	FA96631-15	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	90%		50-150%
	13C8-PFOA	102%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	57%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	100%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	56%		50-150%
	d3-MeFOSAA	109%		50-150%
	d5-EtFOSAA	94%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	119%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	69%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1018-045.0-20220617		
Lab Sample ID:	FA96631-16	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94633.D	1	07/07/22 01:03	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94634.D	5	07/07/22 01:20	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0049	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0041	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0037	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0063	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0159	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0206	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0196	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [c]	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1018-045.0-20220617		
Lab Sample ID:	FA96631-16	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [c]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [d]	58%	50-150%
	13C5-PFPeA	43% [d]	56%	50-150%
	13C5-PFHxA	46% [d]	57%	50-150%
	13C4-PFHpA	54%	61%	50-150%
	13C8-PFOA	62%	66%	50-150%
	13C9-PFNA	66%	65%	50-150%
	13C6-PFDA	66%	67%	50-150%
	13C7-PFUnDA	65%	65%	50-150%
	13C2-PFDoDA	62%	63%	50-150%
	13C2-PFTeDA	52%	59%	50-150%
	13C3-PFBS	45% [d]	57%	50-150%
	13C3-PFHxS	57%	64%	50-150%
	13C8-PFOS	64%	67%	50-150%
	13C8-FOSA	59%	67%	50-150%
	d3-MeFOSAA	70%	70%	50-150%
	d5-EtFOSAA	70%	68%	50-150%
	13C2-4:2FTS	45% [d]	54%	50-150%
	13C2-6:2FTS	65%	63%	50-150%
	13C2-8:2FTS	66%	62%	50-150%
	13C3-HFPO-DA	40% [d]	53%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-005.0-20220617		
Lab Sample ID:	FA96631-17	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94635.D	1	07/07/22 01:36	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	3Q62822.D	1	07/16/22 06:17	MV	07/08/22 09:55	OP91991	S3Q857
Run #3 [b]	2Q94636.D	5	07/07/22 01:53	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0696 [c]	0.080	0.040	0.020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-005.0-20220617		
Lab Sample ID:	FA96631-17	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [c]	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [c]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	39% [e]	56%	57%	50-150%
	13C5-PFPeA	35% [e]	40% [e]	54%	50-150%
	13C5-PFHxA	39% [e]	43% [e]	56%	50-150%
	13C4-PFHpA	49% [e]	60%	62%	50-150%
	13C8-PFOA	59%	78%	66%	50-150%
	13C9-PFNA	64%	67%	70%	50-150%
	13C6-PFDA	68%	65%	71%	50-150%
	13C7-PFUnDA	67%	63%	69%	50-150%
	13C2-PFDoDA	64%	51%	63%	50-150%
	13C2-PFTeDA	49% [e]	34% [e]	36% [e]	50-150%
	13C3-PFBS	40% [e]	42% [e]	59%	50-150%
	13C3-PFHxS	58%	72%	67%	50-150%
	13C8-PFOS	67%	63%	73%	50-150%
	13C8-FOSA	37% [e]	35% [e]	48% [e]	50-150%
	d3-MeFOSAA	70%	66%	69%	50-150%
	d5-EtFOSAA	69%	50%	71%	50-150%
	13C2-4:2FTS	40% [e]	46% [e]	57%	50-150%
	13C2-6:2FTS	66%	90%	69%	50-150%
	13C2-8:2FTS	68%	74%	68%	50-150%
	13C3-HFPO-DA	36% [e]	37% [e]	50%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220617-02		
Lab Sample ID:	FA96631-18	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94637.D	1	07/07/22 02:09	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	3Q62823.D	1	07/16/22 06:35	MV	07/08/22 09:55	OP91991	S3Q857
Run #3 [b]	2Q94638.D	5	07/07/22 02:26	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	105 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	105 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0713 [c]	0.095	0.048	0.024	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.024 U [c]	0.048	0.024	0.012	ug/l	
307-24-4	Perfluorohexanoic acid	0.024 U [c]	0.048	0.024	0.012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.024 U [c]	0.048	0.024	0.012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
375-95-1	Perfluorononanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-76-2	Perfluorodecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
307-55-1	Perfluorododecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.024 U [c]	0.048	0.024	0.012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.024 U [c]	0.048	0.024	0.012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.024 U [c]	0.048	0.024	0.012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.024 U [c]	0.048	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
2991-50-6	EtFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-FD-20220617-02		
Lab Sample ID:	FA96631-18	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.048 U [c]	0.095	0.048	0.024	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.048 U [c]	0.095	0.048	0.024	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	40% [e]	51%	55%	50-150%
	13C5-PFPeA	36% [e]	35% [e]	51%	50-150%
	13C5-PFHxA	40% [e]	40% [e]	52%	50-150%
	13C4-PFHpA	49% [e]	56%	56%	50-150%
	13C8-PFOA	58%	73%	60%	50-150%
	13C9-PFNA	59%	63%	61%	50-150%
	13C6-PFDA	61%	63%	59%	50-150%
	13C7-PFUnDA	57%	63%	57%	50-150%
	13C2-PFDoDA	52%	52%	51%	50-150%
	13C2-PFTeDA	41% [e]	32% [e]	39% [e]	50-150%
	13C3-PFBS	40% [e]	39% [e]	56%	50-150%
	13C3-PFHxS	56%	66%	66%	50-150%
	13C8-PFOS	61%	60%	68%	50-150%
	13C8-FOSA	34% [e]	29% [e]	38% [e]	50-150%
	d3-MeFOSAA	59%	65%	60%	50-150%
	d5-EtFOSAA	58%	50%	58%	50-150%
	13C2-4:2FTS	41% [e]	42% [e]	55%	50-150%
	13C2-6:2FTS	65%	85%	63%	50-150%
	13C2-8:2FTS	61%	70%	60%	50-150%
	13C3-HFPO-DA	35% [e]	35% [e]	49% [e]	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-015.0-20220617		
Lab Sample ID:	FA96631-19	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94639.D	1	07/07/22 02:42	JB	06/30/22 09:15	OP91896	S2Q1322
Run #2 [a]	2Q94640.D	5	07/07/22 02:59	JB	06/30/22 09:15	OP91896	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0252	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0022	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0022	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0060	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0101	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [c]	0.080	0.040	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1019-015.0-20220617
Lab Sample ID: FA96631-19 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [c]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [d]	60%	50-150%
	13C5-PFPeA	43% [d]	57%	50-150%
	13C5-PFHxA	47% [d]	60%	50-150%
	13C4-PFHpA	55%	64%	50-150%
	13C8-PFOA	63%	69%	50-150%
	13C9-PFNA	67%	70%	50-150%
	13C6-PFDA	67%	70%	50-150%
	13C7-PFUnDA	65%	67%	50-150%
	13C2-PFDoDA	63%	64%	50-150%
	13C2-PFTeDA	50%	60%	50-150%
	13C3-PFBS	46% [d]	61%	50-150%
	13C3-PFHxS	59%	68%	50-150%
	13C8-PFOS	64%	71%	50-150%
	13C8-FOSA	52%	65%	50-150%
	d3-MeFOSAA	74%	72%	50-150%
	d5-EtFOSAA	77%	75%	50-150%
	13C2-4:2FTS	46% [d]	57%	50-150%
	13C2-6:2FTS	67%	68%	50-150%
	13C2-8:2FTS	69%	67%	50-150%
	13C3-HFPO-DA	42% [d]	52%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-025.0-20220617		
Lab Sample ID:	FA96631-20	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q1827.D	1	07/07/22 16:11	JB	06/30/22 09:00	OP91898	S6Q33
Run #2 [a]	2Q95192.D	1	07/18/22 04:59	JB	07/11/22 09:20	OP92012	S2Q1329
Run #3 [a]	6Q1872.D	5	07/08/22 16:23	JB	06/30/22 09:00	OP91898	S6Q34

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0120	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1019-025.0-20220617
Lab Sample ID: FA96631-20 **Date Sampled:** 06/17/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	67%	59%	84%	50-150%
	13C5-PFPeA	74%	57%	85%	50-150%
	13C5-PFHxA	85%	27% [c]	90%	50-150%
	13C4-PFHpA	88%	10% [c]	95%	50-150%
	13C8-PFOA	93%	54%	99%	50-150%
	13C9-PFNA	93%	71%	97%	50-150%
	13C6-PFDA	94%	70%	93%	50-150%
	13C7-PFUnDA	88%	65%	87%	50-150%
	13C2-PFDoDA	80%	55%	83%	50-150%
	13C2-PFTeDA	70%	18% [c]	84%	50-150%
	13C3-PFBS	86%	40% [c]	89%	50-150%
	13C3-PFHxS	91%	5% [c]	93%	50-150%
	13C8-PFOS	93%	60%	93%	50-150%
	13C8-FOSA	23% [c]	35% [c]	30% [c]	50-150%
	d3-MeFOSAA	86%	27% [c]	90%	50-150%
	d5-EtFOSAA	81%	79%	81%	50-150%
	13C2-4:2FTS	90%	31% [c]	90%	50-150%
	13C2-6:2FTS	100%	29% [c]	99%	50-150%
	13C2-8:2FTS	99%	72%	89%	50-150%
	13C3-HFPO-DA	85%	19% [c]	93%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-035.0-20220617		
Lab Sample ID:	FA96631-21	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	6Q1828.D	1	07/07/22 16:27	JB	06/30/22 09:00	OP91898	S6Q33
Run #2 [b]	6Q1873.D	5	07/08/22 16:39	JB	06/30/22 09:00	OP91898	S6Q34

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-035.0-20220617		
Lab Sample ID:	FA96631-21	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%	94%	50-150%
	13C5-PFPeA	80%	95%	50-150%
	13C5-PFHxA	86%	102%	50-150%
	13C4-PFHpA	93%	101%	50-150%
	13C8-PFOA	97%	107%	50-150%
	13C9-PFNA	101%	100%	50-150%
	13C6-PFDA	94%	100%	50-150%
	13C7-PFUnDA	87%	97%	50-150%
	13C2-PFDoDA	87%	95%	50-150%
	13C2-PFTeDA	74%	96%	50-150%
	13C3-PFBS	88%	101%	50-150%
	13C3-PFHxS	92%	102%	50-150%
	13C8-PFOS	90%	102%	50-150%
	13C8-FOSA	27% d	32%	50-150%
	d3-MeFOSAA	85%	97%	50-150%
	d5-EtFOSAA	75%	86%	50-150%
	13C2-4:2FTS	91%	98%	50-150%
	13C2-6:2FTS	104%	107%	50-150%
	13C2-8:2FTS	92%	93%	50-150%
	13C3-HFPO-DA	82%	94%	50-150%

(a) Insufficient sample for re-extraction.
(b) Confirmation run.
(c) Associated ID Standard outside control limits, Confirmed by batch QC.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-DPT1019-045.0-20220617
Lab Sample ID: FA96631-22
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94876.D	1	07/11/22 09:37	JB	06/30/22 09:00	OP91898	S2Q1324
Run #2 [a]	6Q1830.D	1	07/07/22 16:57	JB	06/30/22 09:00	OP91898	S6Q33

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S014-DPT1019-045.0-20220617		
Lab Sample ID:	FA96631-22	**Date Sampled:**	06/17/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%	83%	50-150%
	13C5-PFPeA	85%	86%	50-150%
	13C5-PFHxA	87%	93%	50-150%
	13C4-PFHpA	93%	97%	50-150%
	13C8-PFOA	100%	98%	50-150%
	13C9-PFNA	102%	103%	50-150%
	13C6-PFDA	101%	99%	50-150%
	13C7-PFUnDA	94%	88%	50-150%
	13C2-PFDoDA	92%	83%	50-150%
	13C2-PFTeDA	67%	66%	50-150%
	13C3-PFBS	84%	93%	50-150%
	13C3-PFHxS	96%	95%	50-150%
	13C8-PFOS	98%	91%	50-150%
	13C8-FOSA	51%	46% b	50-150%
	d3-MeFOSAA	104%	89%	50-150%
	d5-EtFOSAA	103%	78%	50-150%
	13C2-4:2FTS	87%	95%	50-150%
	13C2-6:2FTS	104%	104%	50-150%
	13C2-8:2FTS	96%	95%	50-150%
	13C3-HFPO-DA	88%	87%	50-150%

(a) Confirmation run.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220617-01
Lab Sample ID: FA96631-23
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94889.D	1	07/11/22 13:12	JB	06/30/22 09:00	OP91898	S2Q1324
Run #2 [a]	6Q1832.D	1	07/07/22 17:28	JB	06/30/22 09:00	OP91898	S6Q33

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-EB-20220617-01
Lab Sample ID: FA96631-23 **Date Sampled:** 06/17/22
Matrix: AQ - Equipment Blank **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	117%	101%	50-150%
	13C5-PFPeA	116%	102%	50-150%
	13C5-PFHxA	118%	104%	50-150%
	13C4-PFHpA	117%	104%	50-150%
	13C8-PFOA	120%	105%	50-150%
	13C9-PFNA	115%	103%	50-150%
	13C6-PFDA	116%	101%	50-150%
	13C7-PFUnDA	107%	93%	50-150%
	13C2-PFDoDA	105%	96%	50-150%
	13C2-PFTeDA	83%	90%	50-150%
	13C3-PFBS	116%	100%	50-150%
	13C3-PFHxS	117%	100%	50-150%
	13C8-PFOS	111%	100%	50-150%
	13C8-FOSA	112%	96%	50-150%
	d3-MeFOSAA	109%	85%	50-150%
	d5-EtFOSAA	106%	84%	50-150%
	13C2-4:2FTS	112%	96%	50-150%
	13C2-6:2FTS	112%	104%	50-150%
	13C2-8:2FTS	106%	93%	50-150%
	13C3-HFPO-DA	132%	105%	50-150%

(a) Confirmation run.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220617-01
Lab Sample ID: FA96631-24
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95195.D	1	07/18/22 05:48	JB	07/11/22 09:20	OP92012	S2Q1329
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S014-FB-20220617-01
Lab Sample ID: FA96631-24 **Date Sampled:** 06/17/22
Matrix: AQ - Field Blank Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	71%		50-150%
	13C9-PFNA	70%		50-150%
	13C6-PFDA	68%		50-150%
	13C7-PFUnDA	71%		50-150%
	13C2-PFDoDA	59%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	68%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSAA	70%		50-150%
	d5-EtFOSAA	69%		50-150%
	13C2-4:2FTS	64%		50-150%
	13C2-6:2FTS	67%		50-150%
	13C2-8:2FTS	68%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96631

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NACH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S014-DPT1016-005.0-20220617	6/17/22	0757	JB	GW	2		X								X	
2	S014-DPT1016-015.0-20220617	6/17/22	0811	JB	GW	2		X								X	
3	S014-DPT1016-025.0-20220617	6/17/22	0824	JB	GW	2		X								X	
4	S014-DPT1016-035.0-20220617	6/17/22	0840	JB	GW	2		X								X	
5	S014-DPT1016-045.0-20220617	6/17/22	0857	JB	GW	2		X								X	
6	S014-DPT1017-005.0-20220617	6/17/22	0939	JB	GW	2		X								X	
7	S014-DPT1017-015.0-20220617	6/17/22	0951	JB	GW	2		X								X	
8	S014-DPT1017-025.0-20220617	6/17/22	1007	JB	GW	2		X								X	
9	S014-DPT1017-035.0-20220617	6/17/22	1024	JB	GW	2		X								X	
10	S014-FD-20220617-01	6/17/22	1024	JB	GW	2		X								X	
11	S014-DPT1017-045.0-20220617	6/17/22	1044	JB	GW	2		X								X	
12	S014-DPT1018-005.0-20220617	6/17/22	1145	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2 6/17/22 15:35	3 6/17/22 16:40		4 6/17/22 1640
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.2C, 1.8C, 4.6C IR1

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220616 Rev 031318

FA96631: Chain of Custody
Page 1 of 3

FA96631

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 014 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	CONTAINER INFORMATION: NONE	HCl	NaOH	HNO3	H2SO4	NACH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S014-DPT1018-015.0-20220617	6/17/22	1201	JB	GW	2		X								X	
14	S014-DPT1018-025.0-20220617	6/17/22	1213	JB	GW	2		X								X	
15	S014-DPT1018-035.0-20220617	6/17/22	1231	JB	GW	2		X								X	
16	S014-DPT1018-045.0-20220617	6/17/22	1249	JB	GW	2		X								X	
17	S014-DPT1019-005.0-20220617	6/17/22	1331	JB	GW	2		X								X	
18	S014-FD-20220617-02	6/17/22	1331	JB	GW	2		X								X	
19	S014-DPT1019-015.0-20220617	6/17/22	1339	JB	GW	2		X								X	
20	S014-DPT1019-025.0-20220617	6/17/22	1348	JB	GW	2		X								X	
21	S014-DPT1019-035.0-20220617	6/17/22	1402	JB	GW	2		X								X	
22	S014-DPT1019-045.0-20220617	6/17/22	1416	JB	GW	2		X								X	
23	S014-EB-20220617-01	6/17/22	1440	JB	WW	2		X								X	
24	S014-FB-20220617-01	6/17/22	1445	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2	3 6/17/22 15:25	6/17/22 18:40	4 6/17/22 1640
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220616 Rev 031318

SGS Sample Receipt Summary

Job Number: FA96631 **Client:** HGL, INC. **Project:** SWMU 014 PFAS ASSESSMENT

Date / Time Received: 6/17/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8); Cooler 3: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (5.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/17/2022 4:40:00 PM Reviewer: _____ Date: _____

FA96631: Chain of Custody
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QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91876	EPA 537M QSM5.3 B-15						
OP91876-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	73-129
OP91876-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	101	%	73-129
OP91876-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	101	%	72-129
OP91876-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	100	%	72-129
OP91876-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	105	%	72-129
OP91876-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	105	%	72-129
OP91876-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	106	%	72-130
OP91876-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	107	%	72-130
OP91876-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP91876-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	97	%	71-133
OP91876-BS	375-95-1	Perfluorononanoic acid	BSP	REC	101	%	69-130
OP91876-BS	375-95-1	Perfluorononanoic acid	BSP	REC	101	%	69-130
OP91876-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	105	%	71-129
OP91876-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	109	%	71-129
OP91876-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	102	%	69-133
OP91876-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	104	%	69-133
OP91876-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP91876-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	103	%	72-134
OP91876-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	90	%	65-144
OP91876-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	87	%	65-144
OP91876-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	99	%	71-132
OP91876-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	101	%	71-132
OP91876-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	105	%	72-130
OP91876-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	103	%	72-130
OP91876-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	109	%	71-127
OP91876-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	108	%	71-127
OP91876-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	102	%	68-131
OP91876-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	97	%	68-131
OP91876-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	114	%	69-134
OP91876-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	113	%	69-134
OP91876-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	106	%	65-140
OP91876-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	104	%	65-140
OP91876-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP91876-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	106	%	69-127
OP91876-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	100	%	53-142
OP91876-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	102	%	53-142
OP91876-BS	754-91-6	PFOSA	BSP	REC	106	%	67-137
OP91876-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP91876-BS	2355-31-9	MeFOSAA	BSP	REC	102	%	65-136
OP91876-BS	2355-31-9	MeFOSAA	BSP	REC	101	%	65-136
OP91876-BS	2991-50-6	EtFOSAA	BSP	REC	109	%	61-135
OP91876-BS	2991-50-6	EtFOSAA	BSP	REC	103	%	61-135

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91876-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	107	%	63-143
OP91876-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	106	%	63-143
OP91876-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	106	%	64-140
OP91876-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	108	%	64-140
OP91876-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	108	%	67-138
OP91876-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	108	%	67-138
OP91876-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	102	%	73-129
OP91876-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	101	%	72-129
OP91876-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	104	%	72-129
OP91876-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	110	%	72-130
OP91876-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	99	%	71-133
OP91876-MS*	375-95-1	Perfluorononanoic acid	MS	REC	105	%	69-130
OP91876-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	107	%	71-129
OP91876-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	105	%	69-133
OP91876-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	104	%	72-134
OP91876-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	109	%	65-144
OP91876-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	99	%	71-132
OP91876-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	104	%	72-130
OP91876-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	111	%	71-127
OP91876-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	100	%	68-131
OP91876-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	115	%	69-134
OP91876-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	102	%	65-140
OP91876-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	97	%	69-127
OP91876-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	100	%	53-142
OP91876-MS*	754-91-6	PFOSA	MS	REC	110	%	67-137
OP91876-MS*	2355-31-9	MeFOSAA	MS	REC	104	%	65-136
OP91876-MS*	2991-50-6	EtFOSAA	MS	REC	108	%	61-135
OP91876-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	105	%	63-143
OP91876-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	109	%	64-140
OP91876-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	109	%	67-138
OP91876-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP91876-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP91876-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	101	%	72-129
OP91876-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP91876-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	104	%	72-129
OP91876-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	0	%	30
OP91876-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	108	%	72-130
OP91876-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP91876-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	101	%	71-133
OP91876-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	2	%	30
OP91876-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	104	%	69-130
OP91876-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	0	%	30
OP91876-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	105	%	71-129
OP91876-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP91876-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	105	%	69-133

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91876-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	0	%	30
OP91876-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	105	%	72-134
OP91876-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP91876-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	105	%	65-144
OP91876-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP91876-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	99	%	71-132
OP91876-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	0	%	30
OP91876-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	107	%	72-130
OP91876-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP91876-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	111	%	71-127
OP91876-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP91876-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	101	%	68-131
OP91876-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	0	%	30
OP91876-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	119	%	69-134
OP91876-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP91876-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	104	%	65-140
OP91876-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	2	%	30
OP91876-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	97	%	69-127
OP91876-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP91876-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	97	%	53-142
OP91876-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP91876-MSD*	754-91-6	PFOSA	MSD	REC	111	%	67-137
OP91876-MSD*	754-91-6	PFOSA	MSD	RPD	1	%	30
OP91876-MSD*	2355-31-9	MeFOSAA	MSD	REC	106	%	65-136
OP91876-MSD*	2355-31-9	MeFOSAA	MSD	RPD	2	%	30
OP91876-MSD*	2991-50-6	EtFOSAA	MSD	REC	110	%	61-135
OP91876-MSD*	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP91876-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	108	%	63-143
OP91876-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP91876-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	107	%	64-140
OP91876-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91876-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	111	%	67-138
OP91876-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91896	EPA 537M QSM5.3 B-15						
OP91896-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	114	%	73-129
OP91896-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	121	%	73-129
OP91896-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	114	%	72-129
OP91896-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	123	%	72-129
OP91896-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	123	%	72-129
OP91896-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	113	%	72-129
OP91896-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	121	%	72-130
OP91896-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	111	%	72-130
OP91896-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	113	%	71-133

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91896-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	123	%	71-133
OP91896-BS	375-95-1	Perfluorononanoic acid	BSP	REC	121	%	69-130
OP91896-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP91896-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	114	%	71-129
OP91896-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	126	%	71-129
OP91896-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	113	%	69-133
OP91896-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	121	%	69-133
OP91896-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	113	%	72-134
OP91896-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	119	%	72-134
OP91896-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	106	%	65-144
OP91896-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	102	%	65-144
OP91896-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	111	%	71-132
OP91896-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	124	%	71-132
OP91896-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	124	%	72-130
OP91896-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	113	%	72-130
OP91896-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	125	%	71-127
OP91896-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	114	%	71-127
OP91896-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	122	%	68-131
OP91896-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	116	%	68-131
OP91896-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	126	%	69-134
OP91896-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	118	%	69-134
OP91896-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	123	%	65-140
OP91896-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	118	%	65-140
OP91896-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	125	%	69-127
OP91896-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	116	%	69-127
OP91896-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	118	%	53-142
OP91896-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	113	%	53-142
OP91896-BS	754-91-6	PFOSA	BSP	REC	113	%	67-137
OP91896-BS	754-91-6	PFOSA	BSP	REC	123	%	67-137
OP91896-BS	2355-31-9	MeFOSAA	BSP	REC	116	%	65-136
OP91896-BS	2355-31-9	MeFOSAA	BSP	REC	124	%	65-136
OP91896-BS	2991-50-6	EtFOSAA	BSP	REC	113	%	61-135
OP91896-BS	2991-50-6	EtFOSAA	BSP	REC	128	%	61-135
OP91896-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	113	%	63-143
OP91896-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	122	%	63-143
OP91896-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP91896-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	121	%	64-140
OP91896-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	113	%	67-138
OP91896-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	123	%	67-138
OP91896-MS	375-22-4	Perfluorobutanoic acid	MS	REC	111	%	73-129
OP91896-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	117	%	72-129
OP91896-MS	307-24-4	Perfluorohexanoic acid	MS	REC	114	%	72-129
OP91896-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	115	%	72-130
OP91896-MS	335-67-1	Perfluorooctanoic acid	MS	REC	118	%	71-133
OP91896-MS	375-95-1	Perfluorononanoic acid	MS	REC	115	%	69-130

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91896-MS	335-76-2	Perfluorodecanoic acid	MS	REC	117	%	71-129
OP91896-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	115	%	69-133
OP91896-MS	307-55-1	Perfluorododecanoic acid	MS	REC	115	%	72-134
OP91896-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	110	%	65-144
OP91896-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	115	%	71-132
OP91896-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	116	%	72-130
OP91896-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	122	%	71-127
OP91896-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	115	%	68-131
OP91896-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	120	%	69-134
OP91896-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	117	%	65-140
OP91896-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	120	%	69-127
OP91896-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	114	%	53-142
OP91896-MS	754-91-6	PFOSA	MS	REC	119	%	67-137
OP91896-MS	2355-31-9	MeFOSAA	MS	REC	120	%	65-136
OP91896-MS	2991-50-6	EtFOSAA	MS	REC	120	%	61-135
OP91896-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	116	%	63-143
OP91896-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140
OP91896-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	116	%	67-138
OP91896-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	5	%	30
OP91896-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	200	%	30
OP91896-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91896-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91896-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91896-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91896-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91896-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91896-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91896-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91896-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91896-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91896-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91896-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91896-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91896-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91896-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

OP91898 EPA 537M QSM5.3 B-15

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91898-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	78	%	73-129
OP91898-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	77	%	73-129
OP91898-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	75	%	72-129
OP91898-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	78	%	72-129
OP91898-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	71	%	72-129
OP91898-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	78	%	72-129
OP91898-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	77	%	72-130
OP91898-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	76	%	72-130
OP91898-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	76	%	71-133
OP91898-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	74	%	71-133
OP91898-BS	375-95-1	Perfluorononanoic acid	BSP	REC	77	%	69-130
OP91898-BS	375-95-1	Perfluorononanoic acid	BSP	REC	78	%	69-130
OP91898-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	76	%	71-129
OP91898-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	76	%	71-129
OP91898-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	76	%	69-133
OP91898-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	73	%	69-133
OP91898-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	78	%	72-134
OP91898-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	76	%	72-134
OP91898-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	71	%	65-144
OP91898-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	74	%	65-144
OP91898-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	77	%	71-132
OP91898-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	77	%	71-132
OP91898-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	77	%	72-130
OP91898-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	76	%	72-130
OP91898-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	78	%	71-127
OP91898-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	79	%	71-127
OP91898-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	76	%	68-131
OP91898-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	74	%	68-131
OP91898-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	77	%	69-134
OP91898-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	79	%	69-134
OP91898-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	72	%	65-140
OP91898-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	75	%	65-140
OP91898-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	74	%	69-127
OP91898-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	76	%	69-127
OP91898-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	70	%	53-142
OP91898-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	78	%	53-142
OP91898-BS	754-91-6	PFOSA	BSP	REC	77	%	67-137
OP91898-BS	754-91-6	PFOSA	BSP	REC	77	%	67-137
OP91898-BS	2355-31-9	MeFOSAA	BSP	REC	77	%	65-136
OP91898-BS	2355-31-9	MeFOSAA	BSP	REC	78	%	65-136
OP91898-BS	2991-50-6	EtFOSAA	BSP	REC	78	%	61-135
OP91898-BS	2991-50-6	EtFOSAA	BSP	REC	74	%	61-135
OP91898-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	76	%	63-143
OP91898-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	73	%	63-143
OP91898-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	76	%	64-140

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91898-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	75	%	64-140
OP91898-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	74	%	67-138
OP91898-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	76	%	67-138
OP91898-MS	375-22-4	Perfluorobutanoic acid	MS	REC	101	%	73-129
OP91898-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	106	%	72-129
OP91898-MS	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	72-129
OP91898-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	99	%	72-130
OP91898-MS	335-67-1	Perfluorooctanoic acid	MS	REC	101	%	71-133
OP91898-MS	375-95-1	Perfluorononanoic acid	MS	REC	101	%	69-130
OP91898-MS	335-76-2	Perfluorodecanoic acid	MS	REC	89	%	71-129
OP91898-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	91	%	69-133
OP91898-MS	307-55-1	Perfluorododecanoic acid	MS	REC	100	%	72-134
OP91898-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	81	%	65-144
OP91898-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	103	%	71-132
OP91898-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	101	%	72-130
OP91898-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	101	%	71-127
OP91898-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	98	%	68-131
OP91898-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	106	%	69-134
OP91898-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	98	%	65-140
OP91898-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	93	%	69-127
OP91898-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	92	%	53-142
OP91898-MS	754-91-6	PFOSA	MS	REC	99	%	67-137
OP91898-MS	2355-31-9	MeFOSAA	MS	REC	99	%	65-136
OP91898-MS	2991-50-6	EtFOSAA	MS	REC	108	%	61-135
OP91898-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	101	%	63-143
OP91898-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	99	%	64-140
OP91898-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	101	%	67-138
OP91898-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP91898-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP91898-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91898-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91898-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91898-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91898-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91898-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91898-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91898-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91898-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91898-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91898-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91898-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91898-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91898-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91898-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91898-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91898-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91991	EPA 537M QSM5.3 B-15						
OP91991-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	109	%	73-129
OP91991-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	115	%	72-129
OP91991-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	111	%	72-129
OP91991-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	112	%	72-130
OP91991-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	113	%	71-133
OP91991-BS	375-95-1	Perfluorononanoic acid	BSP	REC	112	%	69-130
OP91991-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	113	%	71-129
OP91991-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	109	%	69-133
OP91991-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	111	%	72-134
OP91991-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	111	%	65-144
OP91991-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	116	%	71-132
OP91991-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	113	%	72-130
OP91991-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP91991-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	115	%	68-131
OP91991-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	116	%	69-134
OP91991-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	114	%	65-140
OP91991-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	115	%	69-127
OP91991-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	99	%	53-142
OP91991-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP91991-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP91991-BS	2991-50-6	EtFOSAA	BSP	REC	114	%	61-135
OP91991-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	116	%	63-143
OP91991-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	113	%	64-140
OP91991-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	115	%	67-138
OP92012	EPA 537M QSM5.3 B-15						
OP92012-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	73-129
OP92012-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	112	%	72-129
OP92012-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	111	%	72-129
OP92012-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	110	%	72-130
OP92012-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	110	%	71-133
OP92012-BS	375-95-1	Perfluorononanoic acid	BSP	REC	105	%	69-130
OP92012-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	111	%	71-129
OP92012-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	104	%	69-133
OP92012-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134

* Sample used for QC is not from job FA96631

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96631
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92012-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	95	%	65-144
OP92012-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	117	%	71-132
OP92012-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	107	%	72-130
OP92012-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	104	%	71-127
OP92012-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP92012-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	105	%	69-134
OP92012-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	111	%	65-140
OP92012-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	109	%	69-127
OP92012-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	94	%	53-142
OP92012-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP92012-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP92012-BS	2991-50-6	EtFOSAA	BSP	REC	119	%	61-135
OP92012-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	112	%	63-143
OP92012-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	107	%	64-140
OP92012-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	107	%	67-138

* Sample used for QC is not from job FA96631

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	92%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	94%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q442-IBLK	4Q30571.D	1	07/07/22	NG	n/a	n/a	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	116%	50-150%
	13C9-PFNA	112%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	101%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q442-IBLK	4Q30571.D	1	07/07/22	NG	n/a	n/a	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries		Limits
	13C2-PFTeDA	109%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	108%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	122%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q33-IBLK	6Q1820.D	1	07/07/22	JB	n/a	n/a	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	96%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q33-IBLK	6Q1820.D	1	07/07/22	JB	n/a	n/a	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	96%	50-150%
	d3-MeFOSAA	96%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	98%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1324-IBLK	2Q94807.D	1	07/10/22	JB	n/a	n/a	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-22, FA96631-23

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	87%	50-150%
	13C6-PFDA	87%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1324-IBLK	2Q94807.D	1	07/10/22	JB	n/a	n/a	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-22, FA96631-23

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	85%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	90%	50-150%
	d3-MeFOSA	94%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	85%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	92%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	100%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	101%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	85%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1329-IBLK	2Q95147.D	1	07/17/22	JB	n/a	n/a	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1329-IBLK	2Q95147.D	1	07/17/22	JB	n/a	n/a	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	94%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	75%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MB	4Q30551.D	1	07/06/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	86%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	85%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MB	4Q30551.D	1	07/06/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	72%	50-150%
	13C2-PFTeDA	64%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSA	59%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	76%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MB	4Q30575.D	1	07/07/22	NG	06/29/22	OP91876	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	77%	50-150%
	13C5-PFHxA	76%	50-150%
	13C4-PFHpA	80%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	82%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MB	4Q30575.D	1	07/07/22	NG	06/29/22	OP91876	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	72%	50-150%
	13C2-PFTeDA	62%	50-150%
	13C3-PFBS	79%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	86%	50-150%
	13C8-FOSA	90%	50-150%
	d3-MeFOSA	60%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	75%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	77%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MB	6Q1826.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	136%	50-150%
	13C5-PFPeA	134%	50-150%
	13C5-PFHxA	135%	50-150%
	13C4-PFHpA	138%	50-150%
	13C8-PFOA	138%	50-150%
	13C9-PFNA	136%	50-150%
	13C6-PFDA	140%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MB	6Q1826.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	136%	50-150%
	13C2-PFDoDA	128%	50-150%
	13C2-PFTeDA	126%	50-150%
	13C3-PFBS	137%	50-150%
	13C3-PFHxS	131%	50-150%
	13C8-PFOS	134%	50-150%
	13C8-FOSA	123%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	125%	50-150%
	13C2-6:2FTS	135%	50-150%
	13C2-8:2FTS	131%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MB	2Q94888.D	1	07/11/22	JB	06/30/22	OP91898	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	143%	50-150%
	13C5-PFPeA	142%	50-150%
	13C5-PFHxA	143%	50-150%
	13C4-PFHpA	143%	50-150%
	13C8-PFOA	147%	50-150%
	13C9-PFNA	146%	50-150%
	13C6-PFDA	146%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MB	2Q94888.D	1	07/11/22	JB	06/30/22	OP91898	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	139%	50-150%
	13C2-PFDoDA	136%	50-150%
	13C2-PFTeDA	136%	50-150%
	13C3-PFBS	142%	50-150%
	13C3-PFHxS	143%	50-150%
	13C8-PFOS	142%	50-150%
	13C8-FOSA	134%	50-150%
	d3-MeFOSAA	141%	50-150%
	d5-EtFOSAA	140%	50-150%
	13C2-4:2FTS	136%	50-150%
	13C2-6:2FTS	136%	50-150%
	13C2-8:2FTS	132%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94430.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	70%	50-150%
	13C5-PFPeA	69%	50-150%
	13C5-PFHxA	70%	50-150%
	13C4-PFHpA	71%	50-150%
	13C8-PFOA	70%	50-150%
	13C9-PFNA	70%	50-150%
	13C6-PFDA	69%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94430.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	69%	50-150%
	13C2-PFDoDA	66%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	69%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	69%	50-150%
	13C8-FOSA	64%	50-150%
	d3-MeFOSA	37%* [a]	50-150%
	d3-MeFOSAA	72%	50-150%
	d5-EtFOSAA	67%	50-150%
	13C2-4:2FTS	67%	50-150%
	13C2-6:2FTS	69%	50-150%
	13C2-8:2FTS	66%	50-150%
	13C3-HFPO-DA	67%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94602.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	83%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	82%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94602.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	84%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSA	42%* [a]	50-150%
	d3-MeFOSAA	78%	50-150%
	d5-EtFOSAA	74%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	79%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	84%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	91%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	96%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-MB	2Q95172.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-MB	2Q95172.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	48%* [a]	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	88%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	75%	50-150%

(a) Outside control limits.

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1320-IBLK	2Q94426.D	1	07/02/22	JB	n/a	n/a	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91896-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	97%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1320-IBLK	2Q94426.D	1	07/02/22	JB	n/a	n/a	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91896-BS

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	85%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q441-IBLK	4Q30547.D	1	07/06/22	NG	n/a	n/a	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91876-BS, OP91876-MS, OP91876-MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	107%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	111%	50-150%
	13C6-PFDA	105%	50-150%

Instrument Blank

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q441-IBLK	4Q30547.D	1	07/06/22	NG	n/a	n/a	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91876-BS, OP91876-MS, OP91876-MSD

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	120%	50-150%
	13C3-PFBS	105%	50-150%
	13C3-PFHxS	118%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	134%	50-150%
	d3-MeFOSA	138%	50-150%
	d3-MeFOSAA	121%	50-150%
	d5-EtFOSAA	126%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	114%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	106%	50-150%

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-BS	4Q30550.D	1	07/06/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0808	101	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0801	100	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0838	105	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0845	106	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0776	97	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0811	101	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0871	109	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0834	104	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0820	103	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0720	90	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0806	101	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0836	105	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0869	109	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0819	102	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0909	114	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0851	106	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0815	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0802	100	53-142
754-91-6	PFOSA	0.08	0.0871	109	67-137
2355-31-9	MeFOSAA	0.08	0.0810	101	65-136
2991-50-6	EtFOSAA	0.08	0.0823	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0846	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0865	108	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0864	108	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0922	115	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	85%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-BS	4Q30550.D	1	07/06/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	86%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSA	32%* [a]	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	84%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-BS	4Q30574.D	1	07/07/22	NG	06/29/22	OP91876	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0800	100	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0805	101	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0843	105	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0857	107	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0785	98	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0806	101	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0839	105	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0818	102	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0828	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0697	87	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0793	99	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0821	103	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0866	108	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0773	97	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0906	113	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0832	104	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0845	106	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0813	102	53-142
754-91-6	PFOSA	0.08	0.0848	106	67-137
2355-31-9	MeFOSAA	0.08	0.0812	102	65-136
2991-50-6	EtFOSAA	0.08	0.0875	109	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0853	107	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0849	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0863	108	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0964	121	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	83%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-BS	4Q30574.D	1	07/07/22	NG	06/29/22	OP91876	S4Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	66%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSA	30%*	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	84%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-BS	6Q1825.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.123	77	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.120	75	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.114	71*	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.121	76	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.119	74	71-133
375-95-1	Perfluorononanoic acid	0.16	0.125	78	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.121	76	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.117	73	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.121	76	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.114	71	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.123	77	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.122	76	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.125	78	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.119	74	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.123	77	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.115	72	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.118	74	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.112	70	53-142
754-91-6	PFOSA	0.16	0.123	77	67-137
2355-31-9	MeFOSAA	0.16	0.124	78	65-136
2991-50-6	EtFOSAA	0.16	0.118	74	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.117	73	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.120	75	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.119	74	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.131	82	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	130%	50-150%
	13C5-PFPeA	131%	50-150%
	13C5-PFHxA	133%	50-150%
	13C4-PFHpA	133%	50-150%
	13C8-PFOA	132%	50-150%
	13C9-PFNA	129%	50-150%
	13C6-PFDA	130%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-BS	6Q1825.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	129%	50-150%
	13C2-PFDoDA	126%	50-150%
	13C2-PFTeDA	126%	50-150%
	13C3-PFBS	130%	50-150%
	13C3-PFHxS	126%	50-150%
	13C8-PFOS	129%	50-150%
	13C8-FOSA	124%	50-150%
	d3-MeFOSAA	121%	50-150%
	d5-EtFOSAA	120%	50-150%
	13C2-4:2FTS	130%	50-150%
	13C2-6:2FTS	134%	50-150%
	13C2-8:2FTS	130%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-BS	2Q94887.D	1	07/11/22	JB	06/30/22	OP91898	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.124	78	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.124	78	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.124	78	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.123	77	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.121	76	71-133
375-95-1	Perfluorononanoic acid	0.16	0.123	77	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.122	76	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.122	76	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.125	78	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.119	74	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.123	77	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.123	77	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.127	79	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.121	76	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.126	79	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.120	75	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.121	76	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.124	78	53-142
754-91-6	PFOSA	0.16	0.123	77	67-137
2355-31-9	MeFOSAA	0.16	0.123	77	65-136
2991-50-6	EtFOSAA	0.16	0.124	78	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.122	76	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.122	76	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.122	76	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.149	93	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	150%	50-150%
	13C5-PFPeA	149%	50-150%
	13C5-PFHxA	150%	50-150%
	13C4-PFHpA	150%	50-150%
	13C8-PFOA	152%* [a]	50-150%
	13C9-PFNA	150%	50-150%
	13C6-PFDA	150%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-BS	2Q94887.D	1	07/11/22	JB	06/30/22	OP91898	S2Q1324

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21, FA96631-22, FA96631-23

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	147%	50-150%
	13C2-PFDoDA	144%	50-150%
	13C2-PFTeDA	147%	50-150%
	13C3-PFBS	149%	50-150%
	13C3-PFHxS	151%* [a]	50-150%
	13C8-PFOS	150%	50-150%
	13C8-FOSA	142%	50-150%
	d3-MeFOSAA	151%* [a]	50-150%
	d5-EtFOSAA	146%	50-150%
	13C2-4:2FTS	148%	50-150%
	13C2-6:2FTS	146%	50-150%
	13C2-8:2FTS	142%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94429.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.194	121	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.197	123	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.196	123	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.194	121	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.196	123	71-133
375-95-1	Perfluorononanoic acid	0.16	0.194	121	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.201	126	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.193	121	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.190	119	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.170	106	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.198	124	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.199	124	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.200	125	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.195	122	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.201	126	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.196	123	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.200	125	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.188	118	53-142
754-91-6	PFOSA	0.16	0.196	123	67-137
2355-31-9	MeFOSAA	0.16	0.199	124	65-136
2991-50-6	EtFOSAA	0.16	0.205	128	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.195	122	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.194	121	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.197	123	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.186	116	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	71%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	72%	50-150%
	13C4-PFHpA	73%	50-150%
	13C8-PFOA	72%	50-150%
	13C9-PFNA	72%	50-150%
	13C6-PFDA	70%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94429.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	70%	50-150%
	13C2-PFDoDA	67%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	70%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	63%	50-150%
	d3-MeFOSA	35%* [a]	50-150%
	d3-MeFOSAA	70%	50-150%
	d5-EtFOSAA	64%	50-150%
	13C2-4:2FTS	72%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	71%	50-150%
	13C3-HFPO-DA	67%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94601.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.182	114	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.182	114	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.180	113	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.178	111	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.180	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.182	114	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.181	113	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.180	113	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.163	102	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.178	111	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.181	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.183	114	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.185	116	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.188	118	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.189	118	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.186	116	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.180	113	53-142
754-91-6	PFOSA	0.16	0.180	113	67-137
2355-31-9	MeFOSAA	0.16	0.186	116	65-136
2991-50-6	EtFOSAA	0.16	0.180	113	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.181	113	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.175	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.181	113	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.182	114	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	91%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94601.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSA	41%* [a]	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	88%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.174	109	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.184	115	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.178	111	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.179	112	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.179	112	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.180	113	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.174	109	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.177	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.178	111	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.186	116	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.181	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.178	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.184	115	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.186	116	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.183	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.184	115	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.159	99	53-142
754-91-6	PFOSA	0.16	0.174	109	67-137
2355-31-9	MeFOSAA	0.16	0.175	109	65-136
2991-50-6	EtFOSAA	0.16	0.182	114	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.185	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.181	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.184	115	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.167	104	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	50-150%
	13C5-PFPeA	119%	50-150%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	119%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	106%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-15

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	119%	50-150%
	13C3-PFHxS	119%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	120%	50-150%
	13C2-6:2FTS	121%	50-150%
	13C2-8:2FTS	133%	50-150%
	13C3-HFPO-DA	116%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-BS	2Q95171.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0798	100	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0896	112	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0889	111	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0882	110	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0876	110	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0843	105	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0885	111	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0835	104	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0836	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0763	95	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0936	117	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0853	107	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0831	104	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0828	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0838	105	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0889	111	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0868	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0752	94	53-142
754-91-6	PFOSA	0.08	0.0873	109	67-137
2355-31-9	MeFOSAA	0.08	0.0872	109	65-136
2991-50-6	EtFOSAA	0.08	0.0953	119	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0897	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0853	107	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0855	107	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0880	110	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-BS	2Q95171.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-1, FA96631-2, FA96631-24

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSA	30%* [a]	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	82%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MS	6Q1829.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-21 [a]	6Q1828.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-21 [b]	6Q1873.D	5	07/08/22	JB	06/30/22	OP91898	S6Q34

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	Compound	FA96631-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.161	101	73-129
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.16	0.170	106	72-129
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.153	96	72-129
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.159	99	72-130
335-67-1	Perfluorooctanoic acid	0.0080	U	0.16	0.161	101	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.161	101	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.143	89	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.146	91	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.160	100	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.130	81	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.165	103	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.161	101	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.162	101	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.16	0.157	98	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.169	106	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.16	0.157	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.148	93	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.147	92	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.159	99	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.159	99	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.172	108	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.162	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.159	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.162	101	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.189	118	60-140

CAS No.	ID Standard Recoveries	MS	FA96631-21	FA96631-21	Limits
	13C4-PFBA	82%	78%	94%	50-150%
	13C5-PFPeA	83%	80%	95%	50-150%
	13C5-PFHxA	92%	86%	102%	50-150%
	13C4-PFHpA	96%	93%	101%	50-150%
	13C8-PFOA	99%	97%	107%	50-150%
	13C9-PFNA	100%	101%	100%	50-150%
	13C6-PFDA	103%	94%	100%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-MS	6Q1829.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-21 [a]	6Q1828.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-21 [b]	6Q1873.D	5	07/08/22	JB	06/30/22	OP91898	S6Q34

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	ID Standard Recoveries	MS	FA96631-21	FA96631-21	Limits
	13C7-PFUnDA	91%	87%	97%	50-150%
	13C2-PFDoDA	81%	87%	95%	50-150%
	13C2-PFTeDA	47%* [c]	74%	96%	50-150%
	13C3-PFBS	96%	88%	101%	50-150%
	13C3-PFHxS	97%	92%	102%	50-150%
	13C8-PFOS	97%	90%	102%	50-150%
	13C8-FOSA	28%* [c]	27%* [c]	32%*	50-150%
	d3-MeFOSAA	87%	85%	97%	50-150%
	d5-EtFOSAA	77%	75%	86%	50-150%
	13C2-4:2FTS	102%	91%	98%	50-150%
	13C2-6:2FTS	110%	104%	107%	50-150%
	13C2-8:2FTS	102%	92%	93%	50-150%
	13C3-HFPO-DA		82%	94%	50-150%

(a) Insufficient sample for re-extraction.
(b) Confirmation run.
(c) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MS	2Q94605.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-5	2Q94603.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	FA96631-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.016	U	0.2	0.221	111	73-129
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.2	0.234	117	72-129
307-24-4	Perfluorohexanoic acid	0.0080	U	0.2	0.227	114	72-129
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.2	0.229	115	72-130
335-67-1	Perfluorooctanoic acid	0.0080	U	0.2	0.235	118	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.2	0.229	115	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.2	0.233	117	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.2	0.230	115	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.2	0.229	115	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.2	0.219	110	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.2	0.229	115	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.2	0.231	116	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.2	0.244	122	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.2	0.230	115	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.2	0.240	120	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.2	0.233	117	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.2	0.239	120	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.2	0.228	114	53-142
754-91-6	PFOSA	0.0080	U	0.2	0.238	119	67-137
2355-31-9	MeFOSAA	0.016	U	0.2	0.239	120	65-136
2991-50-6	EtFOSAA	0.016	U	0.2	0.240	120	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.2	0.232	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.2	0.225	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.2	0.231	116	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.2	0.239	120	60-140

CAS No.	ID Standard Recoveries	MS	FA96631-5	Limits
	13C4-PFBA	72%	66%	50-150%
	13C5-PFPeA	68%	62%	50-150%
	13C5-PFHxA	70%	63%	50-150%
	13C4-PFHpA	74%	68%	50-150%
	13C8-PFOA	78%	74%	50-150%
	13C9-PFNA	79%	77%	50-150%
	13C6-PFDA	76%	74%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MS	2Q94605.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-5	2Q94603.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries	MS	FA96631-5	Limits
	13C7-PFUnDA	73%	72%	50-150%
	13C2-PFDoDA	70%	68%	50-150%
	13C2-PFTeDA	64%	60%	50-150%
	13C3-PFBS	70%	64%	50-150%
	13C3-PFHxS	76%	71%	50-150%
	13C8-PFOS	74%	74%	50-150%
	13C8-FOSA	57%	61%	50-150%
	d3-MeFOSAA	77%	79%	50-150%
	d5-EtFOSAA	77%	82%	50-150%
	13C2-4:2FTS	73%	63%	50-150%
	13C2-6:2FTS	78%	77%	50-150%
	13C2-8:2FTS	85%	79%	50-150%
	13C3-HFPO-DA	66%	60%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MS	4Q30560.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
OP91876-MSD	4Q30562.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
FA96626-3	4Q30558.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
FA96626-3 [a]	4Q30559.D	5	07/07/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	Compound	FA96626-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0020	J	0.0714	0.0746	102	0.0714	0.0740	101	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0021	J	0.0714	0.0739	101	0.0714	0.0744	101	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0017	J	0.0714	0.0760	104	0.0714	0.0758	104	0	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0027	J	0.0714	0.0811	110	0.0714	0.0801	108	1	72-130/30
335-67-1	Perfluorooctanoic acid	0.0021	J	0.0714	0.0727	99	0.0714	0.0745	101	2	71-133/30
375-95-1	Perfluorononanoic acid	0.0036	U	0.0714	0.0748	105	0.0714	0.0746	104	0	69-130/30
335-76-2	Perfluorodecanoic acid	0.0036	U	0.0714	0.0761	107	0.0714	0.0753	105	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0036	U	0.0714	0.0750	105	0.0714	0.0753	105	0	69-133/30
307-55-1	Perfluorododecanoic acid	0.0036	U	0.0714	0.0745	104	0.0714	0.0751	105	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0036	U	0.0714	0.0780	109	0.0714	0.0752	105	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0036	U	0.0714	0.0705	99	0.0714	0.0705	99	0	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0036	U	0.0714	0.0742	104	0.0714	0.0764	107	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0036	U	0.0714	0.0794	111	0.0714	0.0790	111	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0073		0.0714	0.0790	100	0.0714	0.0793	101	0	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0036	U	0.0714	0.0822	115	0.0714	0.0852	119	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0256		0.0714	0.0983	102	0.0714	0.100	104	2	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0036	U	0.0714	0.0694	97	0.0714	0.0693	97	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0036	U	0.0714	0.0713	100	0.0714	0.0693	97	3	53-142/30
754-91-6	PFOSA	0.0036	U	0.0714	0.0784	110	0.0714	0.0791	111	1	67-137/30
2355-31-9	MeFOSAA	0.0071	U	0.0714	0.0744	104	0.0714	0.0756	106	2	65-136/30
2991-50-6	EtFOSAA	0.0071	U	0.0714	0.0774	108	0.0714	0.0788	110	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0071	U	0.0714	0.0751	105	0.0714	0.0771	108	3	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0071	U	0.0714	0.0776	109	0.0714	0.0766	107	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0071	U	0.0714	0.0782	109	0.0714	0.0793	111	1	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0071	U	0.0714	0.0923	129	0.0714	0.0887	124	4	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96626-3	FA96626-3	Limits
	13C4-PFBA	70%	84%	77%	96%	50-150%
	13C5-PFPeA	68%	80%	75%	92%	50-150%
	13C5-PFHxA	68%	80%	75%	95%	50-150%
	13C4-PFHpA	73%	85%	82%	100%	50-150%
	13C8-PFOA	79%	91%	93%	117%	50-150%
	13C9-PFNA	76%	87%	87%	113%	50-150%
	13C6-PFDA	71%	82%	82%	99%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91876-MS	4Q30560.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
OP91876-MSD	4Q30562.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
FA96626-3	4Q30558.D	1	07/07/22	NG	06/29/22	OP91876	S4Q441
FA96626-3 [a]	4Q30559.D	5	07/07/22	NG	06/29/22	OP91876	S4Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-3, FA96631-4

CAS No.	ID Standard Recoveries	MS	MSD	FA96626-3	FA96626-3	Limits
	13C7-PFUnDA	67%	75%	78%	92%	50-150%
	13C2-PFDoDA	61%	67%	71%	80%	50-150%
	13C2-PFTeDA	69%	69%	62%	56%	50-150%
	13C3-PFBS	69%	82%	79%	102%	50-150%
	13C3-PFHxS	81%	93%	90%	115%	50-150%
	13C8-PFOS	76%	89%	87%	110%	50-150%
	13C8-FOSA	71%	76%	78%	97%	50-150%
	d3-MeFOSA	11%* [b]	10%* [b]	7%* [b]	16%* [b]	50-150%
	d3-MeFOSAA	83%	95%	95%	109%	50-150%
	d5-EtFOSAA	79%	91%	94%	110%	50-150%
	13C2-4:2FTS	73%	86%	77%	93%	50-150%
	13C2-6:2FTS	78%	92%	87%	108%	50-150%
	13C2-8:2FTS	74%	88%	83%	96%	50-150%
	13C3-HFPO-DA	56%	68%			50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-DUP	6Q1831.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-22 [a]	6Q1830.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	Compound	FA96631-22 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96631-22	Limits
	13C4-PFBA	82%	83%	50-150%
	13C5-PFPeA	87%	86%	50-150%
	13C5-PFHxA	92%	93%	50-150%
	13C4-PFHpA	95%	97%	50-150%
	13C8-PFOA	101%	98%	50-150%
	13C9-PFNA	100%	103%	50-150%
	13C6-PFDA	100%	99%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91898-DUP	6Q1831.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33
FA96631-22 [a]	6Q1830.D	1	07/07/22	JB	06/30/22	OP91898	S6Q33

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-20, FA96631-21

CAS No.	ID Standard Recoveries	DUP	FA96631-22	Limits
	13C7-PFUnDA	95%	88%	50-150%
	13C2-PFDoDA	90%	83%	50-150%
	13C2-PFTeDA	78%	66%	50-150%
	13C3-PFBS	96%	93%	50-150%
	13C3-PFHxS	94%	95%	50-150%
	13C8-PFOS	95%	91%	50-150%
	13C8-FOSA	41%* [b]	46%* [b]	50-150%
	d3-MeFOSAA	94%	89%	50-150%
	d5-EtFOSAA	84%	78%	50-150%
	13C2-4:2FTS	97%	95%	50-150%
	13C2-6:2FTS	104%	104%	50-150%
	13C2-8:2FTS	96%	95%	50-150%
	13C3-HFPO-DA		87%	50-150%

(a) Confirmation run.
(b) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-DUP	2Q94608.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6	2Q94606.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6 [a]	2Q94607.D	5	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	Compound	FA96631-6 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0045	J	0.0043	J	5	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		0.0044	J	200*	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.080 U [b]		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96631-6	FA96631-6	Limits
	13C4-PFBA	59%	49%* [c]	63%	50-150%
	13C5-PFPeA	59%	50%	66%	50-150%
	13C5-PFHxA	63%	53%	70%	50-150%
	13C4-PFHpA	70%	60%	72%	50-150%
	13C8-PFOA	78%	65%	75%	50-150%
	13C9-PFNA	79%	65%	75%	50-150%
	13C6-PFDA	78%	65%	73%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96631
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-DUP	2Q94608.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6	2Q94606.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6 [a]	2Q94607.D	5	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96631-5, FA96631-6, FA96631-7, FA96631-8, FA96631-9, FA96631-10, FA96631-11, FA96631-12, FA96631-13, FA96631-14, FA96631-16, FA96631-17, FA96631-18, FA96631-19

CAS No.	ID Standard Recoveries	DUP	FA96631-6	FA96631-6	Limits
	13C7-PFUnDA	72%	62%	71%	50-150%
	13C2-PFDoDA	69%	59%	69%	50-150%
	13C2-PFTeDA	68%	53%	65%	50-150%
	13C3-PFBS	62%	53%	71%	50-150%
	13C3-PFHxS	73%	61%	78%	50-150%
	13C8-PFOS	78%	62%	71%	50-150%
	13C8-FOSA	77%	63%	75%	50-150%
	d3-MeFOSAA	73%	61%	72%	50-150%
	d5-EtFOSAA	74%	62%	72%	50-150%
	13C2-4:2FTS	62%	52%	67%	50-150%
	13C2-6:2FTS	78%	64%	71%	50-150%
	13C2-8:2FTS	73%	60%	66%	50-150%
	13C3-HFPO-DA	57%	49%* [c]	66%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

SWMU 118 Laboratory Analytical Reports

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

SWMU 118 NS1010.01.06

SGS Job Number: FA93378



Sampling Date: 02/22/22

Report to:

HGL, Inc
2405 N Courtenay Pkwy Suite 203
Merritt Island, FL 32953
drivers@hgl.com

ATTN: Denise Rivers

Total number of pages in report: **38**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA93378

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93378-1	02/22/22	13:45	PD	02/23/22	AQ	Surface Water	S118-SW0001-000.0-20220222
FA93378-2	02/22/22	14:35	PD	02/23/22	AQ	Surface Water	S118-SW0002-000.0-20220222
FA93378-3	02/22/22	14:35	PD	02/23/22	AQ	Surface Water	S118-FD-20220222-01
FA93378-4	02/22/22	14:50	PD	02/23/22	AQ	Surface Water	S118-SW0003-000.0-20220222
FA93378-5	02/22/22	15:00	PD	02/23/22	AQ	Surface Water	S118-SW0004-000.0-20220222
FA93378-6	02/22/22	15:05	PD	02/23/22	AQ	Field Blank Water	S118-FB-20220222-01
FA93378-7	02/22/22	15:10	PD	02/23/22	AQ	Equipment Blank	S118-EB-20220222-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93378

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 3/15/2022 2:24:36 PM

On 02/23/2022, 6 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93378 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP89960

Sample(s) FA93316-6MS, FA93316-6MSD were used as the QC samples indicated.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA93378
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93378-1	**S118-SW0001-000.0-20220222**					
Perfluorobutanoic acid		0.0489	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.162	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0873	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0702	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0362	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0097	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0022 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0029 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0172	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0185	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93378-2	**S118-SW0002-000.0-20220222**					
Perfluorobutanoic acid		0.0097 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0109	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0141	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0051 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0082	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0071 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0090	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0964	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0064 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.483	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93378-3	**S118-FD-20220222-01**					
Perfluorobutanoic acid		0.0096 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0092	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0139	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0046 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0075 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0071 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0091	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0915	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0074 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.468	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93378-4	**S118-SW0003-000.0-20220222**					
Perfluorobutanoic acid		0.0096 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0085	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0126	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0042 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93378
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanoic acid		0.0070 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0060 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0079	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0783	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0057 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.293	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
FA93378-5	**S118-SW0004-000.0-20220222**					
Perfluorobutanoic acid		0.0055 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93378-6	**S118-FB-20220222-01**					
No hits reported in this sample.						
FA93378-7	**S118-EB-20220222-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-SW0001-000.0-20220222
Lab Sample ID: FA93378-1
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26381.D	1	03/12/22 10:06	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0489	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.162	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0873	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0702	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0362	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0097	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0022	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0029	0.0077	0.0038	0.0019	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0172	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0185	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0001-000.0-20220222		
Lab Sample ID:	FA93378-1	**Date Sampled:**	02/22/22
Matrix:	AQ - Surface Water	**Date Received:**	02/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	91%		50-150%
	13C9-PFNA	92%		50-150%
	13C6-PFDA	95%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	74%		50-150%
	13C3-PFBS	78%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	100%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	71%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0002-000.0-20220222
Lab Sample ID: FA93378-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26382.D	1	03/12/22 10:22	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0097	0.015	0.0077	0.0038	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0109	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0141	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0051	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0082	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0071	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0090	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0964	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0064	0.0077	0.0038	0.0019	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.483	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0002-000.0-20220222
Lab Sample ID: FA93378-2 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	57%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	76%		50-150%
	13C2-PFTeDA	62%		50-150%
	13C3-PFBS	61%		50-150%
	13C3-PFHxS	70%		50-150%
	13C8-PFOS	75%		50-150%
	13C8-FOSA	73%		50-150%
	d3-MeFOSAA	93%		50-150%
	d5-EtFOSAA	88%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	83%		50-150%
	13C3-HFPO-DA	57%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220222-01
Lab Sample ID: FA93378-3
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26383.D	1	03/12/22 10:37	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0096	0.015	0.0077	0.0038	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0092	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0139	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0046	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0075	0.0077	0.0038	0.0019	ug/l	J
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0071	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0091	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0915	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0074	0.0077	0.0038	0.0019	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.468	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FD-20220222-01		
Lab Sample ID:	FA93378-3	**Date Sampled:**	02/22/22
Matrix:	AQ - Surface Water	**Date Received:**	02/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	64%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	103%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	58%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0003-000.0-20220222
Lab Sample ID: FA93378-4
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26384.D	1	03/12/22 10:53	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0096	0.015	0.0077	0.0038	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0085	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0126	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042	0.0077	0.0038	0.0019	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0070	0.0077	0.0038	0.0019	ug/l	J
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0060	0.0077	0.0038	0.0019	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0079	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0783	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0057	0.0077	0.0038	0.0019	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.293	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0003-000.0-20220222
Lab Sample ID: FA93378-4 **Date Sampled:** 02/22/22
Matrix: AQ - Surface Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	75%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSAA	101%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	62%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0004-000.0-20220222
Lab Sample ID: FA93378-5
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26385.D	1	03/12/22 11:09	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0055	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0004-000.0-20220222		
Lab Sample ID:	FA93378-5	**Date Sampled:**	02/22/22
Matrix:	AQ - Surface Water	**Date Received:**	02/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	71%		50-150%
	13C3-PFBS	68%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	71%		50-150%
	d3-MeFOSAA	99%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220222-01
Lab Sample ID: FA93378-6
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26386.D	1	03/12/22 11:24	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220222-01
Lab Sample ID: FA93378-6 **Date Sampled:** 02/22/22
Matrix: AQ - Field Blank Water **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	94%		50-150%
	13C5-PFHxA	95%		50-150%
	13C4-PFHpA	95%		50-150%
	13C8-PFOA	98%		50-150%
	13C9-PFNA	99%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	93%		50-150%
	13C2-PFTeDA	82%		50-150%
	13C3-PFBS	93%		50-150%
	13C3-PFHxS	94%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	96%		50-150%
	d3-MeFOSAA	105%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220222-01
Lab Sample ID: FA93378-7
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/22/22
Date Received: 02/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q26387.D	1	03/12/22 11:40	MV	02/25/22 10:00	OP89960	S4Q366
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
2991-50-6	EtFOSAA	0.0077 U	0.015	0.0077	0.0038	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220222-01
Lab Sample ID: FA93378-7 **Date Sampled:** 02/22/22
Matrix: AQ - Equipment Blank **Date Received:** 02/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U	0.015	0.0077	0.0038	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0077 U	0.015	0.0077	0.0038	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	83%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	86%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	88%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	81%		50-150%
	13C2-8:2FTS	81%		50-150%
	13C3-HFPO-DA	75%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando
Chain of Custody

SGS - ORLANDO JOB # : FA93778 PAGE 1 OF 1

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL Inc
Address: 2405 N Courtney Pkwy ste 203
City: Merritt Island State: FL Zip: 32953
Project Contact: Denise River Email: drivers@HGL.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: Parker D. Sampler 2: Dustin L.

Project Information

Project Name: SWMU 118 PFAS Assessment
Street: Kennedy Space Center
City: Merritt Island State: FL
Project #: NS1010.01.06
Fax #:
Client Purchase Order #:

Analytical Information

LC/QSM 537 Dod PFAS, LCMS+GenX

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LAB USE ONLY
1	SI18-SW0001-000.0-20220222	2/22/22	1345	PD	SW	2		X							X	
2	SI18-SW0002-000.0-20220222	2/22/22	1435	PD	SW	2		X							X	
3	SI18-FD-20220222-01	2/22/22	1435	PD	SW	2		X							X	
4	SI18-SW0003-000.0-20220222	2/22/22	1450	PD	SW	2		X							X	
5	SI18-SW0004-000.0-20220222	2/22/22	1500	PD	SW	2		X							X	
6	SI18-FB-20220222-01	2/22/22	1505	PD	SW	2		X							X	
7	SI18-EB-20220222-01	2/22/22	1510	PD	SW	2		X							X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT SM
LABEL VERIFICATION CM

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	ZE HGL	2-23-22 1345	2			4 2/23/22
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8 1536

Lab Use Only : Cooler Temperature (s) Celsius (corrected): ~~2.8~~ 3.8 C IR 1

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA93378: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA93378 **Client:** HGL INC **Project:** SWMV 118 PFAS ASSESSMENT

Date / Time Received: 2/23/2022 3:36:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (4.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 2/23/2022 3:36:00 PM Reviewer: _____ Date: _____

FA93378: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93378
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89960	EPA 537M QSM5.3 B-15						
OP89960-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	102	%	73-129
OP89960-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	105	%	72-129
OP89960-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	104	%	72-129
OP89960-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	103	%	72-130
OP89960-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	103	%	71-133
OP89960-BS	375-95-1	Perfluorononanoic acid	BSP	REC	103	%	69-130
OP89960-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	102	%	71-129
OP89960-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	102	%	69-133
OP89960-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	107	%	72-134
OP89960-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	93	%	65-144
OP89960-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	106	%	71-132
OP89960-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	104	%	73-130
OP89960-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	100	%	71-127
OP89960-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	100	%	68-131
OP89960-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	109	%	69-134
OP89960-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	102	%	65-140
OP89960-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP89960-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	94	%	53-142
OP89960-BS	754-91-6	PFOSA	BSP	REC	104	%	67-137
OP89960-BS	2355-31-9	MeFOSAA	BSP	REC	101	%	65-136
OP89960-BS	2991-50-6	EtFOSAA	BSP	REC	109	%	61-135
OP89960-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	108	%	63-143
OP89960-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP89960-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	104	%	67-138
OP89960-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	99	%	73-129
OP89960-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	99	%	72-129
OP89960-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	99	%	72-129
OP89960-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	97	%	72-130
OP89960-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	98	%	71-133
OP89960-MS*	375-95-1	Perfluorononanoic acid	MS	REC	98	%	69-130
OP89960-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	98	%	71-129
OP89960-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	95	%	69-133
OP89960-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	99	%	72-134
OP89960-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	90	%	65-144
OP89960-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	98	%	71-132
OP89960-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	99	%	73-130
OP89960-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	95	%	71-127
OP89960-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	68-131
OP89960-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	104	%	69-134
OP89960-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	95	%	65-140
OP89960-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	100	%	69-127
OP89960-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	93	%	53-142

* Sample used for QC is not from job FA93378

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93378
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89960-MS*	754-91-6	PFOSA	MS	REC	99	%	67-137
OP89960-MS*	2355-31-9	MeFOSAA	MS	REC	95	%	65-136
OP89960-MS*	2991-50-6	EtFOSAA	MS	REC	103	%	61-135
OP89960-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	103	%	63-143
OP89960-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	104	%	64-140
OP89960-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	99	%	67-138
OP89960-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	99	%	73-129
OP89960-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	0	%	30
OP89960-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	99	%	72-129
OP89960-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	0	%	30
OP89960-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	100	%	72-129
OP89960-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP89960-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	99	%	72-130
OP89960-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	3	%	30
OP89960-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	98	%	71-133
OP89960-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP89960-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	98	%	69-130
OP89960-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	0	%	30
OP89960-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	96	%	71-129
OP89960-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP89960-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	97	%	69-133
OP89960-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP89960-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	99	%	72-134
OP89960-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP89960-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	89	%	65-144
OP89960-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP89960-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	100	%	71-132
OP89960-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP89960-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	99	%	73-130
OP89960-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP89960-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	97	%	71-127
OP89960-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP89960-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	98	%	68-131
OP89960-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP89960-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	104	%	69-134
OP89960-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	0	%	30
OP89960-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	96	%	65-140
OP89960-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP89960-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	96	%	69-127
OP89960-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	4	%	30
OP89960-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	90	%	53-142
OP89960-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP89960-MSD*	754-91-6	PFOSA	MSD	REC	99	%	67-137
OP89960-MSD*	754-91-6	PFOSA	MSD	RPD	0	%	30
OP89960-MSD*	2355-31-9	MeFOSAA	MSD	REC	95	%	65-136

* Sample used for QC is not from job FA93378

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93378
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89960-MSD*	2355-31-9	MeFOSAA	MSD	RPD	0	%	30
OP89960-MSD*	2991-50-6	EtFOSAA	MSD	REC	103	%	61-135
OP89960-MSD*	2991-50-6	EtFOSAA	MSD	RPD	0	%	30
OP89960-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	101	%	63-143
OP89960-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP89960-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	104	%	64-140
OP89960-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP89960-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	97	%	67-138
OP89960-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30

* Sample used for QC is not from job FA93378

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26304.D	1	03/11/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	102%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	103%	50-150%
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	106%	50-150%

Instrument Blank

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26304.D	1	03/11/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	103%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	100%	50-150%

Instrument Blank

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26389.D	1	03/12/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	111%	50-150%
	13C6-PFDA	114%	50-150%

Instrument Blank

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q366-IBLK	4Q26389.D	1	03/12/22	MV	n/a	n/a	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	112%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	99%	50-150%

Method Blank Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-MB	4Q26364.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	96%	50-150%

Method Blank Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-MB	4Q26364.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	78%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	94%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	81%	50-150%

Blank Spike Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-BS	4Q26363.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.163	102	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.168	105	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.167	104	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.165	103	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.165	103	71-133
375-95-1	Perfluorononanoic acid	0.16	0.164	103	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.163	102	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.163	102	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.171	107	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.148	93	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.169	106	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.166	104	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.160	100	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.160	100	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.175	109	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.163	102	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.163	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.150	94	53-142
754-91-6	PFOSA	0.16	0.167	104	67-137
2355-31-9	MeFOSAA	0.16	0.162	101	65-136
2991-50-6	EtFOSAA	0.16	0.174	109	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.172	108	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.174	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.167	104	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.170	106	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-BS	4Q26363.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	87%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	95%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-MS	4Q26373.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366
OP89960-MSD	4Q26374.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366
FA93316-6	4Q26372.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	Compound	FA93316-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.158	99	0.16	0.158	99	0	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.16	0.159	99	0.16	0.159	99	0	72-129/30
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.159	99	0.16	0.160	100	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.155	97	0.16	0.159	99	3	72-130/30
335-67-1	Perfluorooctanoic acid	0.0080	U	0.16	0.157	98	0.16	0.156	98	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.157	98	0.16	0.157	98	0	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.156	98	0.16	0.154	96	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.152	95	0.16	0.155	97	2	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.158	99	0.16	0.159	99	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.144	90	0.16	0.142	89	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.157	98	0.16	0.160	100	2	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.158	99	0.16	0.158	99	0	73-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.152	95	0.16	0.155	97	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.16	0.153	96	0.16	0.156	98	2	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.167	104	0.16	0.167	104	0	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.16	0.152	95	0.16	0.153	96	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.160	100	0.16	0.153	96	4	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.148	93	0.16	0.144	90	3	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.158	99	0.16	0.158	99	0	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.152	95	0.16	0.152	95	0	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.164	103	0.16	0.164	103	0	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.164	103	0.16	0.161	101	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.167	104	0.16	0.166	104	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.159	99	0.16	0.155	97	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.162	101	0.16	0.161	101	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA93316-6	Limits
	13C4-PFBA	76%	74%	71%	50-150%
	13C5-PFPeA	87%	83%	79%	50-150%
	13C5-PFHxA	88%	84%	81%	50-150%
	13C4-PFHpA	88%	84%	81%	50-150%
	13C8-PFOA	87%	84%	81%	50-150%
	13C9-PFNA	87%	84%	82%	50-150%
	13C6-PFDA	87%	85%	83%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA93378
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89960-MS	4Q26373.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366
OP89960-MSD	4Q26374.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366
FA93316-6	4Q26372.D	1	03/12/22	MV	02/25/22	OP89960	S4Q366

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93378-1, FA93378-2, FA93378-3, FA93378-4, FA93378-5, FA93378-6, FA93378-7

CAS No.	ID Standard Recoveries	MS	MSD	FA93316-6	Limits
	13C7-PFUnDA	85%	83%	79%	50-150%
	13C2-PFDoDA	86%	82%	77%	50-150%
	13C2-PFTeDA	82%	76%	74%	50-150%
	13C3-PFBS	86%	82%	78%	50-150%
	13C3-PFHxS	87%	83%	80%	50-150%
	13C8-PFOS	84%	80%	75%	50-150%
	13C8-FOSA	88%	84%	85%	50-150%
	d3-MeFOSAA	95%	93%	88%	50-150%
	d5-EtFOSAA	91%	89%	83%	50-150%
	13C2-4:2FTS	86%	84%	74%	50-150%
	13C2-6:2FTS	87%	84%	78%	50-150%
	13C2-8:2FTS	86%	86%	77%	50-150%
	13C3-HFPO-DA	81%	78%		50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

SWMU 118 NS1010.01.06

SGS Job Number: FA93473

Sampling Dates: 02/23/22 - 02/24/22



Report to:

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Total number of pages in report: **116**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA93473

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA93473-1	02/23/22	08:53	JB	02/25/22	AQ	Ground Water	S118-DPT1000-005.0-20220223
FA93473-2	02/23/22	09:06	JB	02/25/22	AQ	Ground Water	S118-DPT1000-015.0-20220223
FA93473-3	02/23/22	09:06	JB	02/25/22	AQ	Ground Water	S118-FD-20220223-01
FA93473-4	02/23/22	09:25	JB	02/25/22	AQ	Ground Water	S118-DPT1000-025.0-20220223
FA93473-5	02/23/22	09:53	JB	02/25/22	AQ	Ground Water	S118-DPT1000-035.0-20220223
FA93473-6	02/23/22	10:23	JB	02/25/22	AQ	Ground Water	S118-DPT1000-045.0-20220223
FA93473-7	02/23/22	12:01	JB	02/25/22	AQ	Ground Water	S118-DPT1001-005.0-20220223
FA93473-8	02/23/22	12:19	JB	02/25/22	AQ	Ground Water	S118-DPT1001-015.0-20220223
FA93473-9	02/23/22	12:26	JB	02/25/22	AQ	Ground Water	S118-DPT1001-025.0-20220223
FA93473-10	02/23/22	12:58	JB	02/25/22	AQ	Ground Water	S118-DPT1001-035.0-20220223
FA93473-11	02/23/22	13:25	JB	02/25/22	AQ	Ground Water	S118-DPT1001-045.0-20220223
FA93473-12	02/23/22	14:22	JB	02/25/22	AQ	Ground Water	S118-DPT1002-005.0-20220223
FA93473-13	02/23/22	14:35	JB	02/25/22	AQ	Ground Water	S118-DPT1002-015.0-20220223

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93473

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93473-14	02/23/22	14:51	JB	02/25/22	AQ	Ground Water	S118-DPT1002-025.0-20220223
FA93473-15	02/23/22	15:13	JB	02/25/22	AQ	Ground Water	S118-DPT1002-035.0-20220223
FA93473-16	02/23/22	15:34	JB	02/25/22	AQ	Ground Water	S118-DPT1002-045.0-20220223
FA93473-17	02/23/22	16:12	JB	02/25/22	AQ	Field Blank Water	S118-FB-20220223-01
FA93473-18	02/23/22	16:18	JB	02/25/22	AQ	Equipment Blank	S118-EB-20220223-01
FA93473-19	02/24/22	07:53	JB	02/25/22	AQ	Ground Water	S118-DPT1003-005.0-20220224
FA93473-20	02/24/22	08:06	JB	02/25/22	AQ	Ground Water	S118-DPT1003-015.0-20220224
FA93473-21	02/24/22	08:23	JB	02/25/22	AQ	Ground Water	S118-DPT1003-025.0-20220224
FA93473-22	02/24/22	08:43	JB	02/25/22	AQ	Ground Water	S118-DPT1003-035.0-20220224
FA93473-23	02/24/22	09:11	JB	02/25/22	AQ	Ground Water	S118-DPT1003-045.0-20220224
FA93473-24	02/24/22	09:11	JB	02/25/22	AQ	Ground Water	S118-FD-20220224-01
FA93473-25	02/24/22	10:11	JB	02/25/22	AQ	Ground Water	S118-DPT1004-005.0-20220224
FA93473-26	02/24/22	10:32	JB	02/25/22	AQ	Ground Water	S118-DPT1004-015.0-20220224

Sample Summary
(continued)

Hydrogeologic, Inc.

Job No: FA93473

NASA TQN 21- SLF PFAS Assessment
Project No: SWMU 118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA93473-27	02/24/22	10:53	JB	02/25/22	AQ	Ground Water	S118-DPT1004-025.0-20220224
FA93473-28	02/24/22	12:02	JB	02/25/22	AQ	Ground Water	S118-DPT1004-035.0-20220224
FA93473-29	02/24/22	13:58	JB	02/25/22	AQ	Ground Water	S118-DPT1005-005.0-20220224
FA93473-30	02/24/22	14:13	JB	02/25/22	AQ	Ground Water	S118-DPT1005-015.0-20220224
FA93473-31	02/24/22	14:29	JB	02/25/22	AQ	Ground Water	S118-DPT1005-025.0-20220224
FA93473-32	02/24/22	14:29	JB	02/25/22	AQ	Ground Water	S118-FD-20220224-02
FA93473-33	02/24/22	14:49	JB	02/25/22	AQ	Ground Water	S118-DPT1005-035.0-20220224
FA93473-34	02/24/22	15:16	JB	02/25/22	AQ	Ground Water	S118-DPT1005-045.0-20220224
FA93473-35	02/24/22	15:40	JB	02/25/22	AQ	Field Blank Water	S118-FB-20220224-01
FA93473-36	02/24/22	15:45	JB	02/25/22	AQ	Equipment Blank	S118-EB-20220224-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93473

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 3/22/2022 2:13:57 PM

On 02/25/2022, 34 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93473 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90061

Sample(s) FA93473-2MS, FA93473-5DUP were used as the QC samples indicated.

Sample(s) FA93473-10, FA93473-13, FA93473-19 have surrogates outside control limits.

FA93473-10 for d5-EtFOSAA: Outside control limits.

FA93473-13 for 6:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

FA93473-13: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA93473-19 for 13C2-PFTeDA: Outside control limits.

FA93473-19 for 13C2-PFTeDA: Outside control limits.

FA93473-19 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP90062

Sample(s) FA93473-23MS, FA93473-30DUP were used as the QC samples indicated.

RPD(s) for Duplicate for PFOSA are outside control limits for sample OP90062-DUP. Probable cause is due to sample non-homogeneity.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93473-1	**S118-DPT1000-005.0-20220223**					
Perfluorohexanesulfonic acid		0.0083	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-2	**S118-DPT1000-015.0-20220223**					
Perfluorohexanesulfonic acid		0.0031 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0023 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-3	**S118-FD-20220223-01**					
Perfluorohexanesulfonic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-4	**S118-DPT1000-025.0-20220223**					
No hits reported in this sample.						
FA93473-5	**S118-DPT1000-035.0-20220223**					
No hits reported in this sample.						
FA93473-6	**S118-DPT1000-045.0-20220223**					
No hits reported in this sample.						
FA93473-7	**S118-DPT1001-005.0-20220223**					
Perfluorobutanoic acid		0.0136 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0324	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0503	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0170	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0336	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0171	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0242	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.181	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0115	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.166	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0130 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
FA93473-8	**S118-DPT1001-015.0-20220223**					
Perfluorobutanoic acid		0.0127 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0397	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0725	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0203	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanoic acid		0.0445	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0257	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0329	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.216	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0175	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.540	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0162	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93473-9	**S118-DPT1001-025.0-20220223**					
Perfluorobutanoic acid		0.0204	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0647	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0752	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0325	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0520	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0249	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0323	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.277	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0214	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.07	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0209	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0306	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93473-10	**S118-DPT1001-035.0-20220223**					
Perfluorobutanoic acid		0.0233	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0763	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.112	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0393	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0673	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0324	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0428	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.345	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0275	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.51	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0418	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0376	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0048 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
FA93473-11	**S118-DPT1001-045.0-20220223**					
Perfluorohexanesulfonic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.0190	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-12	**S118-DPT1002-005.0-20220223**					
No hits reported in this sample.						
FA93473-13	**S118-DPT1002-015.0-20220223**					
No hits reported in this sample.						
FA93473-14	**S118-DPT1002-025.0-20220223**					
Perfluorobutanoic acid		0.0066 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0073 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0095	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0074 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0413	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0358	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-15	**S118-DPT1002-035.0-20220223**					
Perfluorobutanoic acid		0.0091 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0231	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0420	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0102	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0179	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0219	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0259	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.163	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0108	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.173	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0093 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA93473-16	**S118-DPT1002-045.0-20220223**					
Perfluoropentanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0078 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0054 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0266	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.0070 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-17	**S118-FB-20220223-01**					
No hits reported in this sample.						
FA93473-18	**S118-EB-20220223-01**					
No hits reported in this sample.						
FA93473-19	**S118-DPT1003-005.0-20220224**					
Perfluorobutanoic acid		0.0058 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0029 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0022 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-20	**S118-DPT1003-015.0-20220224**					
Perfluorohexanesulfonic acid		0.0120	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0028 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-21	**S118-DPT1003-025.0-20220224**					
Perfluorooctanoic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0113	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-22	**S118-DPT1003-035.0-20220224**					
Perfluoropentanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0082	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-23	**S118-DPT1003-045.0-20220224**					
No hits reported in this sample.						
FA93473-24	**S118-FD-20220224-01**					
No hits reported in this sample.						
FA93473-25	**S118-DPT1004-005.0-20220224**					
Perfluorobutanoic acid		0.0095 J	0.036	0.018	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.0128 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
FA93473-26	**S118-DPT1004-015.0-20220224**					
Perfluorobutanoic acid		0.0064 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0039 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0063 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0023 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0041 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0114	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0175	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA93473-27	**S118-DPT1004-025.0-20220224**					
Perfluorohexanesulfonic acid		0.0046 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0027 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-28	**S118-DPT1004-035.0-20220224**					
Perfluorooctanoic acid		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0062 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-29	**S118-DPT1005-005.0-20220224**					
Perfluorobutanoic acid		0.0071 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0060 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-30	**S118-DPT1005-015.0-20220224**					
Perfluorobutanoic acid		0.0252	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-31	**S118-DPT1005-025.0-20220224**					
Perfluorobutanesulfonic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93473-32	**S118-FD-20220224-02**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA93473-33 S118-DPT1005-035.0-20220224

No hits reported in this sample.

FA93473-34 S118-DPT1005-045.0-20220224

No hits reported in this sample.

FA93473-35 S118-FB-20220224-01

No hits reported in this sample.

FA93473-36 S118-EB-20220224-01

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-DPT1000-005.0-20220223
Lab Sample ID: FA93473-1 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86916.D	1	03/15/22 03:58	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1000-005.0-20220223		
Lab Sample ID:	FA93473-1	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	69%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	53%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	97%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	71%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	92%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	69%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	99%		50-150%
	13C3-HFPO-DA	89%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-015.0-20220223
Lab Sample ID: FA93473-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86912.D	1	03/15/22 02:51	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0031	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-015.0-20220223
Lab Sample ID: FA93473-2 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	64%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220223-01
Lab Sample ID: FA93473-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86917.D	1	03/15/22 04:14	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220223-01
Lab Sample ID: FA93473-3 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	94%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	91%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-025.0-20220223
Lab Sample ID: FA93473-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86918.D	1	03/15/22 04:31	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1000-025.0-20220223		
Lab Sample ID:	FA93473-4	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	83%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	89%		50-150%
	13C6-PFDA	100%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	86%		50-150%
	13C8-PFOS	92%		50-150%
	13C8-FOSA	95%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	99%		50-150%
	13C2-8:2FTS	99%		50-150%
	13C3-HFPO-DA	94%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-035.0-20220223
Lab Sample ID: FA93473-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86914.D	1	03/15/22 03:24	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1000-035.0-20220223		
Lab Sample ID:	FA93473-5	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	78%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	98%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-045.0-20220223
Lab Sample ID: FA93473-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86919.D	1	03/15/22 04:48	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1000-045.0-20220223
Lab Sample ID: FA93473-6 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		50-150%
	13C5-PFPeA	79%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	90%		50-150%
	13C6-PFDA	95%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	91%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	87%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	84%		50-150%
	13C2-4:2FTS	84%		50-150%
	13C2-6:2FTS	104%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	101%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-005.0-20220223
Lab Sample ID: FA93473-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86922.D	1	03/15/22 05:38	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0136	0.018	0.0091	0.0045	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0324	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0503	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0170	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0336	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0171	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0242	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.181	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0115	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.166	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0130	0.018	0.0091	0.0045	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1001-005.0-20220223		
Lab Sample ID:	FA93473-7	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	64%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	93%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	64%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	91%		50-150%
	13C8-FOSA	82%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	72%		50-150%
	13C2-6:2FTS	100%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-015.0-20220223
Lab Sample ID: FA93473-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86923.D	1	03/15/22 05:55	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0127	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0397	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0725	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0203	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0445	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0257	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0329	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.216	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0175	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.540	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0025	0.0080	0.0040	0.0020	ug/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0162	0.016	0.0080	0.0040	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-015.0-20220223
Lab Sample ID: FA93473-8 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	90%		50-150%
	13C9-PFNA	95%		50-150%
	13C6-PFDA	111%		50-150%
	13C7-PFUnDA	109%		50-150%
	13C2-PFDoDA	98%		50-150%
	13C2-PFTeDA	89%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	99%		50-150%
	13C8-FOSA	95%		50-150%
	d3-MeFOSAA	108%		50-150%
	d5-EtFOSAA	108%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	102%		50-150%
	13C2-8:2FTS	110%		50-150%
	13C3-HFPO-DA	95%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-025.0-20220223
Lab Sample ID: FA93473-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86924.D	1	03/15/22 06:12	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2	2Q86973.D	5	03/15/22 19:54	JB	03/03/22 09:00	OP90061	S2Q1225

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0204	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0647	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0752	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0325	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0520	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0249	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0323	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.277	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0214	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.07 [a]	0.040	0.020	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0209	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0306	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1001-025.0-20220223		
Lab Sample ID:	FA93473-9	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	97%	50-150%
	13C5-PFPeA	59%	93%	50-150%
	13C5-PFHxA	60%	91%	50-150%
	13C4-PFHpA	77%	105%	50-150%
	13C8-PFOA	81%	106%	50-150%
	13C9-PFNA	85%	108%	50-150%
	13C6-PFDA	100%	121%	50-150%
	13C7-PFUnDA	98%	118%	50-150%
	13C2-PFDoDA	87%	107%	50-150%
	13C2-PFTeDA	76%	96%	50-150%
	13C3-PFBS	67%	98%	50-150%
	13C3-PFHxS	81%	111%	50-150%
	13C8-PFOS	87%	107%	50-150%
	13C8-FOSA	82%	114%	50-150%
	d3-MeFOSAA	95%	120%	50-150%
	d5-EtFOSAA	95%	117%	50-150%
	13C2-4:2FTS	67%	98%	50-150%
	13C2-6:2FTS	95%	118%	50-150%
	13C2-8:2FTS	100%	119%	50-150%
	13C3-HFPO-DA	87%	114%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1001-035.0-20220223		
Lab Sample ID:	FA93473-10	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86974.D	1	03/15/22 20:11	JB	03/03/22 09:00	OP90061	S2Q1225
Run #2	2Q86975.D	5	03/15/22 20:28	JB	03/03/22 09:00	OP90061	S2Q1225

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0233	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0763	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.112	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0393	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0673	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0324	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0428	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.345	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0275	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.51 [a]	0.040	0.020	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0418	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0376	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-035.0-20220223
Lab Sample ID: FA93473-10 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048	0.016	0.0080	0.0040	ug/l	J
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%	120%	50-150%
	13C5-PFPeA	66%	114%	50-150%
	13C5-PFHxA	67%	112%	50-150%
	13C4-PFHpA	81%	128%	50-150%
	13C8-PFOA	86%	131%	50-150%
	13C9-PFNA	88%	132%	50-150%
	13C6-PFDA	103%	148%	50-150%
	13C7-PFUnDA	104%	145%	50-150%
	13C2-PFDoDA	96%	136%	50-150%
	13C2-PFTeDA	87%	128%	50-150%
	13C3-PFBS	72%	120%	50-150%
	13C3-PFHxS	82%	130%	50-150%
	13C8-PFOS	87%	133%	50-150%
	13C8-FOSA	87%	138%	50-150%
	d3-MeFOSAA	105%	147%	50-150%
	d5-EtFOSAA	105%	151% [b]	50-150%
	13C2-4:2FTS	74%	123%	50-150%
	13C2-6:2FTS	101%	147%	50-150%
	13C2-8:2FTS	104%	149%	50-150%
	13C3-HFPO-DA	81%	124%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-045.0-20220223
Lab Sample ID: FA93473-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86976.D	1	03/15/22 20:44	JB	03/03/22 09:00	OP90061	S2Q1225
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0190	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1001-045.0-20220223
Lab Sample ID: FA93473-11 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	89%		50-150%
	13C8-PFOA	92%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	105%		50-150%
	13C7-PFUnDA	102%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	68%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	93%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	104%		50-150%
	d5-EtFOSAA	101%		50-150%
	13C2-4:2FTS	84%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	104%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1002-005.0-20220223		
Lab Sample ID:	FA93473-12	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86927.D	1	03/15/22 07:02	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1002-005.0-20220223		
Lab Sample ID:	FA93473-12	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	78%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	72%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	82%		50-150%
	d3-MeFOSAA	87%		50-150%
	d5-EtFOSAA	84%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-015.0-20220223
Lab Sample ID: FA93473-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q86928.D	1.9	03/15/22 07:19	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	105 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.018 U	0.036	0.018	0.0090	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
307-24-4	Perfluorohexanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
335-67-1	Perfluorooctanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
375-95-1	Perfluorononanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
335-76-2	Perfluorodecanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
307-55-1	Perfluorododecanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0090 U	0.018	0.0090	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0090 U	0.018	0.0090	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.018 U	0.036	0.018	0.0090	ug/l	
2991-50-6	EtFOSAA [b]	0.018 U	0.036	0.018	0.0090	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.018 U	0.036	0.018	0.0090	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate [b]	0.018 U	0.036	0.018	0.0090	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1002-015.0-20220223		
Lab Sample ID:	FA93473-13	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	0.036	0.018	0.0090	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.018 U	0.036	0.018	0.0090	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	135%		50-150%
	13C5-PFPeA	122%		50-150%
	13C5-PFHxA	120%		50-150%
	13C4-PFHpA	143%		50-150%
	13C8-PFOA	141%		50-150%
	13C9-PFNA	138%		50-150%
	13C6-PFDA	145%		50-150%
	13C7-PFUnDA	150%		50-150%
	13C2-PFDoDA	148%		50-150%
	13C2-PFTeDA	112%		50-150%
	13C3-PFBS	131%		50-150%
	13C3-PFHxS	141%		50-150%
	13C8-PFOS	135%		50-150%
	13C8-FOSA	136%		50-150%
	d3-MeFOSAA	149%		50-150%
	d5-EtFOSAA	154% [c]		50-150%
	13C2-4:2FTS	131%		50-150%
	13C2-6:2FTS	166% [c]		50-150%
	13C2-8:2FTS	144%		50-150%
	13C3-HFPO-DA	162% [c]		50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-025.0-20220223
Lab Sample ID: FA93473-14
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86929.D	1	03/15/22 07:35	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0066	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0073	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0095	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0074	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0413	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0358	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-025.0-20220223
Lab Sample ID: FA93473-14 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	83%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	93%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	90%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	78%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	98%		50-150%
	13C8-FOSA	93%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	78%		50-150%
	13C2-6:2FTS	101%		50-150%
	13C2-8:2FTS	104%		50-150%
	13C3-HFPO-DA	93%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-035.0-20220223
Lab Sample ID: FA93473-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86930.D	1	03/15/22 07:52	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0231	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0420	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0102	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0179	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0219	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0259	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.163	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0108	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.173	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0093	0.017	0.0083	0.0042	ug/l	J

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-035.0-20220223
Lab Sample ID: FA93473-15 **Date Sampled:** 02/23/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	73%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	82%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1002-045.0-20220223
Lab Sample ID: FA93473-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86931.D	1	03/15/22 08:09	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0078	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0054	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0266	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0070	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1002-045.0-20220223		
Lab Sample ID:	FA93473-16	**Date Sampled:**	02/23/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%		50-150%
	13C5-PFPeA	76%		50-150%
	13C5-PFHxA	74%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	88%		50-150%
	13C9-PFNA	92%		50-150%
	13C6-PFDA	101%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDoDA	89%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	95%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	95%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220223-01
Lab Sample ID: FA93473-17
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86934.D	1	03/15/22 08:59	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220223-01
Lab Sample ID: FA93473-17 **Date Sampled:** 02/23/22
Matrix: AQ - Field Blank Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	101%		50-150%
	13C5-PFPeA	99%		50-150%
	13C5-PFHxA	95%		50-150%
	13C4-PFHpA	100%		50-150%
	13C8-PFOA	97%		50-150%
	13C9-PFNA	100%		50-150%
	13C6-PFDA	109%		50-150%
	13C7-PFUnDA	104%		50-150%
	13C2-PFDoDA	96%		50-150%
	13C2-PFTeDA	93%		50-150%
	13C3-PFBS	100%		50-150%
	13C3-PFHxS	101%		50-150%
	13C8-PFOS	103%		50-150%
	13C8-FOSA	104%		50-150%
	d3-MeFOSAA	105%		50-150%
	d5-EtFOSAA	104%		50-150%
	13C2-4:2FTS	100%		50-150%
	13C2-6:2FTS	107%		50-150%
	13C2-8:2FTS	108%		50-150%
	13C3-HFPO-DA	119%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220223-01
Lab Sample ID: FA93473-18
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/23/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86935.D	1	03/15/22 09:16	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220223-01
Lab Sample ID: FA93473-18 **Date Sampled:** 02/23/22
Matrix: AQ - Equipment Blank **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	102%		50-150%
	13C5-PFPeA	99%		50-150%
	13C5-PFHxA	97%		50-150%
	13C4-PFHpA	101%		50-150%
	13C8-PFOA	100%		50-150%
	13C9-PFNA	100%		50-150%
	13C6-PFDA	108%		50-150%
	13C7-PFUnDA	104%		50-150%
	13C2-PFDoDA	94%		50-150%
	13C2-PFTeDA	94%		50-150%
	13C3-PFBS	101%		50-150%
	13C3-PFHxS	103%		50-150%
	13C8-PFOS	100%		50-150%
	13C8-FOSA	101%		50-150%
	d3-MeFOSAA	105%		50-150%
	d5-EtFOSAA	103%		50-150%
	13C2-4:2FTS	102%		50-150%
	13C2-6:2FTS	106%		50-150%
	13C2-8:2FTS	106%		50-150%
	13C3-HFPO-DA	120%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-005.0-20220224
Lab Sample ID: FA93473-19 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86936.D	1	03/15/22 09:33	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2	2Q86977.D	5	03/15/22 21:01	JB	03/03/22 09:00	OP90061	S2Q1225

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0058	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0029	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1003-005.0-20220224		
Lab Sample ID:	FA93473-19	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%	110%	50-150%
	13C5-PFPeA	68%	104%	50-150%
	13C5-PFHxA	69%	102%	50-150%
	13C4-PFHpA	86%	115%	50-150%
	13C8-PFOA	91%	116%	50-150%
	13C9-PFNA	93%	117%	50-150%
	13C6-PFDA	103%	123%	50-150%
	13C7-PFUnDA	96%	116%	50-150%
	13C2-PFDoDA	77%	95%	50-150%
	13C2-PFTeDA	38% [c]	47% [c]	50-150%
	13C3-PFBS	77%	109%	50-150%
	13C3-PFHxS	93%	122%	50-150%
	13C8-PFOS	102%	123%	50-150%
	13C8-FOSA	70%	88%	50-150%
	d3-MeFOSAA	84%	104%	50-150%
	d5-EtFOSAA	83%	101%	50-150%
	13C2-4:2FTS	77%	114%	50-150%
	13C2-6:2FTS	110%	133%	50-150%
	13C2-8:2FTS	113%	136%	50-150%
	13C3-HFPO-DA	91%	110%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-015.0-20220224
Lab Sample ID: FA93473-20
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86937.D	1	03/15/22 09:49	JB	03/03/22 09:00	OP90061	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0120	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0028	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1003-015.0-20220224		
Lab Sample ID:	FA93473-20	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	83%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	90%		50-150%
	13C2-PFTeDA	76%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	97%		50-150%
	13C8-FOSA	88%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	96%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	102%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	92%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-025.0-20220224
Lab Sample ID: FA93473-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86947.D	1	03/15/22 12:37	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0113	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-025.0-20220224
Lab Sample ID: FA93473-21 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	74%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	100%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	89%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-035.0-20220224
Lab Sample ID: FA93473-22
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86948.D	1	03/15/22 12:54	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0082	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-035.0-20220224
Lab Sample ID: FA93473-22 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	64%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	79%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	83%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	74%		50-150%
	d3-MeFOSAA	84%		50-150%
	d5-EtFOSAA	83%		50-150%
	13C2-4:2FTS	69%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1003-045.0-20220224
Lab Sample ID: FA93473-23
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86943.D	1	03/15/22 11:30	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1003-045.0-20220224		
Lab Sample ID:	FA93473-23	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	68%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	74%		50-150%
	13C9-PFNA	76%		50-150%
	13C6-PFDA	85%		50-150%
	13C7-PFUnDA	85%		50-150%
	13C2-PFDoDA	76%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	76%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	87%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	88%		50-150%
	13C3-HFPO-DA	86%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220224-01
Lab Sample ID: FA93473-24
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86949.D	1	03/15/22 13:10	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220224-01
Lab Sample ID: FA93473-24 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	77%		50-150%
	13C2-PFTeDA	62%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-005.0-20220224
Lab Sample ID: FA93473-25 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86950.D	2.27	03/15/22 13:27	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0095	0.036	0.018	0.0091	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
307-24-4	Perfluorohexanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
335-67-1	Perfluorooctanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
375-95-1	Perfluorononanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
335-76-2	Perfluorodecanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
307-55-1	Perfluorododecanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0128	0.018	0.0091	0.0045	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.018 U	0.036	0.018	0.0091	ug/l	
2991-50-6	EtFOSAA	0.018 U	0.036	0.018	0.0091	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.018 U	0.036	0.018	0.0091	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	0.036	0.018	0.0091	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-005.0-20220224
Lab Sample ID: FA93473-25 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	0.036	0.018	0.0091	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.018 U	0.036	0.018	0.0091	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	115%		50-150%
	13C5-PFPeA	107%		50-150%
	13C5-PFHxA	103%		50-150%
	13C4-PFHpA	114%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	103%		50-150%
	13C6-PFDA	104%		50-150%
	13C7-PFUnDA	117%		50-150%
	13C2-PFDoDA	128%		50-150%
	13C2-PFTeDA	91%		50-150%
	13C3-PFBS	120%		50-150%
	13C3-PFHxS	120%		50-150%
	13C8-PFOS	106%		50-150%
	13C8-FOSA	105%		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	121%		50-150%
	13C2-4:2FTS	121%		50-150%
	13C2-6:2FTS	136%		50-150%
	13C2-8:2FTS	115%		50-150%
	13C3-HFPO-DA	127%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-015.0-20220224
Lab Sample ID: FA93473-26
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86953.D	1	03/15/22 14:19	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0064	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0039	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0063	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0023	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0041	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0114	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0175	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.103	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1004-015.0-20220224		
Lab Sample ID:	FA93473-26	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	84%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	71%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	121%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	99%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-025.0-20220224
Lab Sample ID: FA93473-27
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86954.D	1	03/15/22 14:36	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0046	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0027	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1004-025.0-20220224		
Lab Sample ID:	FA93473-27	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	59%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	90%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	101%		50-150%
	13C2-PFDoDA	90%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	67%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	91%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	103%		50-150%
	d5-EtFOSAA	103%		50-150%
	13C2-4:2FTS	68%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-035.0-20220224
Lab Sample ID: FA93473-28
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86955.D	1	03/15/22 14:53	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0062	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1004-035.0-20220224
Lab Sample ID: FA93473-28 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%		50-150%
	13C5-PFPeA	54%		50-150%
	13C5-PFHxA	53%		50-150%
	13C4-PFHpA	65%		50-150%
	13C8-PFOA	69%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	82%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	58%		50-150%
	13C3-PFHxS	68%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	59%		50-150%
	13C2-6:2FTS	81%		50-150%
	13C2-8:2FTS	83%		50-150%
	13C3-HFPO-DA	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1005-005.0-20220224
Lab Sample ID: FA93473-29
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86956.D	1	03/15/22 15:09	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0071	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0060	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1005-005.0-20220224		
Lab Sample ID:	FA93473-29	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	79%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	86%		50-150%
	13C7-PFUnDA	81%		50-150%
	13C2-PFDoDA	70%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSAA	82%		50-150%
	d5-EtFOSAA	81%		50-150%
	13C2-4:2FTS	87%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	88%		50-150%
	13C3-HFPO-DA	89%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1005-015.0-20220224
Lab Sample ID: FA93473-30 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86945.D	1	03/15/22 12:03	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0252	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1005-015.0-20220224
Lab Sample ID: FA93473-30 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		50-150%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	81%		50-150%
	13C4-PFHpA	90%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	93%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	79%		50-150%
	13C3-PFBS	90%		50-150%
	13C3-PFHxS	93%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	90%		50-150%
	13C2-6:2FTS	102%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	102%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1005-025.0-20220224
Lab Sample ID: FA93473-31
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86957.D	1	03/15/22 15:26	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1005-025.0-20220224		
Lab Sample ID:	FA93473-31	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	69%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	85%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	101%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDoDA	90%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	74%		50-150%
	d3-MeFOSAA	97%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220224-02
Lab Sample ID: FA93473-32
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 02/24/22
Date Received: 02/25/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86958.D	1	03/15/22 15:43	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FD-20220224-02		
Lab Sample ID:	FA93473-32	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	73%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	88%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	96%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	84%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1005-035.0-20220224		
Lab Sample ID:	FA93473-33	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86959.D	1	03/15/22 16:00	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1005-035.0-20220224		
Lab Sample ID:	FA93473-33	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	68%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	93%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	84%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1005-045.0-20220224		
Lab Sample ID:	FA93473-34	**Date Sampled:**	02/24/22
Matrix:	AQ - Ground Water	**Date Received:**	02/25/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86960.D	1	03/15/22 16:16	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1005-045.0-20220224
Lab Sample ID: FA93473-34 **Date Sampled:** 02/24/22
Matrix: AQ - Ground Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	68%		50-150%
	13C3-PFBS	78%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	89%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220224-01
Lab Sample ID: FA93473-35 **Date Sampled:** 02/24/22
Matrix: AQ - Field Blank Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86961.D	1	03/15/22 16:33	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220224-01
Lab Sample ID: FA93473-35 **Date Sampled:** 02/24/22
Matrix: AQ - Field Blank Water **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	83%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	83%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	86%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	92%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220224-01
Lab Sample ID: FA93473-36 **Date Sampled:** 02/24/22
Matrix: AQ - Equipment Blank **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q86962.D	1	03/15/22 16:50	JB	03/03/22 09:00	OP90062	S2Q1224
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220224-01
Lab Sample ID: FA93473-36 **Date Sampled:** 02/24/22
Matrix: AQ - Equipment Blank **Date Received:** 02/25/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	104%		50-150%
	13C5-PFPeA	103%		50-150%
	13C5-PFHxA	99%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	102%		50-150%
	13C9-PFNA	103%		50-150%
	13C6-PFDA	115%		50-150%
	13C7-PFUnDA	111%		50-150%
	13C2-PFDoDA	101%		50-150%
	13C2-PFTeDA	102%		50-150%
	13C3-PFBS	103%		50-150%
	13C3-PFHxS	105%		50-150%
	13C8-PFOS	105%		50-150%
	13C8-FOSA	108%		50-150%
	d3-MeFOSAA	112%		50-150%
	d5-EtFOSAA	111%		50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	108%		50-150%
	13C2-8:2FTS	112%		50-150%
	13C3-HFPO-DA	113%		50-150%

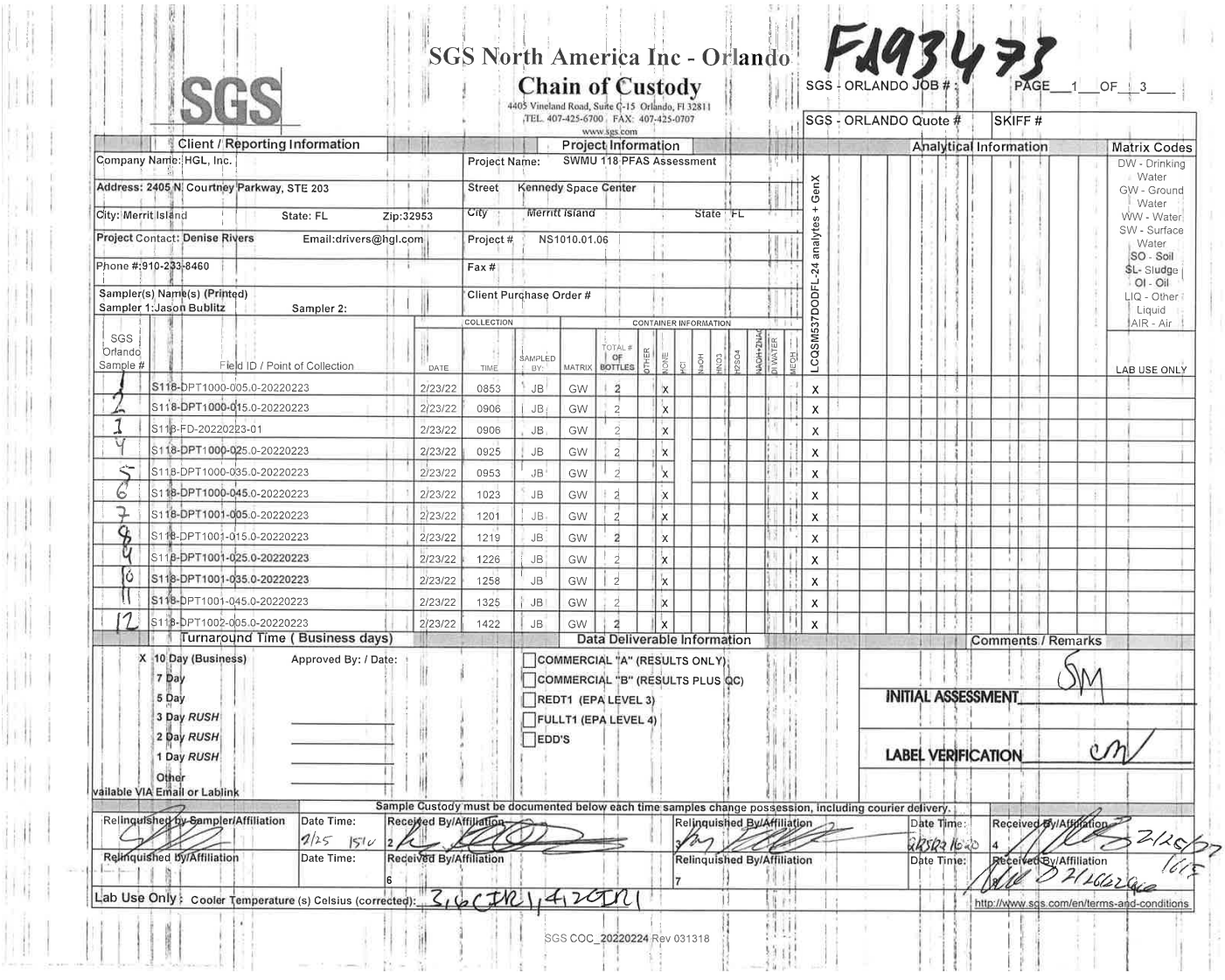
U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

FA93473

SGS - ORLANDO JOB # : PAGE 1 OF 3

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S118-DPT1000-005.0-20220223	2/23/22	0853	JB	GW	2		X								X	
2	S118-DPT1000-015.0-20220223	2/23/22	0906	JB	GW	2		X								X	
3	S118-FD-20220223-01	2/23/22	0906	JB	GW	2		X								X	
4	S118-DPT1000-025.0-20220223	2/23/22	0925	JB	GW	2		X								X	
5	S118-DPT1000-035.0-20220223	2/23/22	0953	JB	GW	2		X								X	
6	S118-DPT1000-045.0-20220223	2/23/22	1023	JB	GW	2		X								X	
7	S118-DPT1001-005.0-20220223	2/23/22	1201	JB	GW	2		X								X	
8	S118-DPT1001-015.0-20220223	2/23/22	1219	JB	GW	2		X								X	
9	S118-DPT1001-025.0-20220223	2/23/22	1226	JB	GW	2		X								X	
10	S118-DPT1001-035.0-20220223	2/23/22	1258	JB	GW	2		X								X	
11	S118-DPT1001-045.0-20220223	2/23/22	1325	JB	GW	2		X								X	
12	S118-DPT1002-005.0-20220223	2/23/22	1422	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

Comments / Remarks

INITIAL ASSESSMENT SM

LABEL VERIFICATION CM

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3	2/25/22 1620	4 2/26/22 1615
Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 2/26/22

Lab Use Only: Cooler Temperature (s) Celsius (corrected): 3.1@CJR1, 4.2@CJR1

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220224 Rev 031318

FA93473: Chain of Custody
Page 1 of 4

FA93473

SGS North America Inc - Orlando

Chain of Custody

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TEL: 407-425-6700 | FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 3

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S118-DPT1002-015.0-20220223	2/23/22	1435	JB	GW	2		X								X	
14	S118-DPT1002-025.0-20220223	2/23/22	1451	JB	GW	2		X								X	
15	S118-DPT1002-035.0-20220223	2/23/22	1513	JB	GW	2		X								X	
16	S118-DPT1002-045.0-20220223	2/23/22	1534	JB	GW	2		X								X	
17	S118-FB-20220223-01	2/23/22	1612	JB	WW	2		X								X	
18	S118-EB-20220223-01	2/23/22	1618	JB	WW	2		X								X	
19	S118-DPT1003-005.0-20220224	2/24/22	0753	JB	GW	2		X								X	
20	S118-DPT1003-015.0-20220224	2/24/22	0806	JB	GW	2		X								X	
21	S118-DPT1003-025.0-20220224	2/24/22	0823	JB	GW	2		X								X	
22	S118-DPT1003-035.0-20220224	2/24/22	0843	JB	GW	2		X								X	
23	S118-DPT1003-045.0-20220224	2/24/22	0911	JB	GW	2		X								X	
24	S118-FD-20220224-01	2/24/22	0911	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation
1		2-25 1510	2
3	Relinquished By/Affiliation	Date Time: 2/25/22 16:20	Received By/Affiliation 4 2/25/22
5	Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6
7	Relinquished By/Affiliation	Date Time:	Received By/Affiliation 8 2/26/22 1615

Lab Use Only: Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220224 Rev 031318

SGS North America Inc - Orlando
Chain of Custody

FA93473

SGS - ORLANDO JOB # : PAGE 3 OF 3

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TEL. 407-425-6700 | FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
25	S118-DPT1004-005.0-20220224	2/24/22	1011	JB	GW	2		X								X	
26	S118-DPT1004-015.0-20220224	2/24/22	1032	JB	GW	2		X								X	
27	S118-DPT1004-025.0-20220224	2/24/22	1053	JB	GW	2		X								X	
28	S118-DPT1004-035.0-20220224	2/24/22	1202	JB	GW	2		X								X	
29	S118-DPT1005-005.0-20220224	2/24/22	1358	JB	GW	2		X								X	
30	S118-DPT1005-015.0-20220224	2/24/22	1413	JB	GW	2		X								X	
31	S118-DPT1005-025.0-20220224	2/24/22	1429	JB	GW	2		X								X	
32	S118-FD-20220224-02	2/24/22	1429	JB	GW	2		X								X	
33	S118-DPT1005-035.0-20220224	2/24/22	1449	JB	GW	2		X								X	
34	S118-DPT1005-045.0-20220224	2/24/22	1516	JB	GW	2		X								X	
35	S118-FB-20220224-01	2/24/22	1540	JB	WW	2		X								X	
36	S118-EB-20220224-01	2/24/22	1545	JB	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	2/25 1510	2	3	2/25/22	4 2/25/22
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 2/26/22 1615

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220224 Rev 031318

FA93473: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FA93473 **Client:** HGL **Project:** SWMU 118 PFAS ASSESSMENT

Date / Time Received: 2/25/2022 4:15:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6); Cooler 2: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.0); Cooler 2: (4.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 2/25/2022 4:15:00 PM Reviewer: _____ Date: _____

FA93473: Chain of Custody
Page 4 of 4

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90061	EPA 537M QSM5.3 B-15						
OP90061-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP90061-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	105	%	72-129
OP90061-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	96	%	72-129
OP90061-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP90061-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP90061-BS	375-95-1	Perfluorononanoic acid	BSP	REC	115	%	69-130
OP90061-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP90061-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	95	%	69-133
OP90061-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	101	%	72-134
OP90061-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	97	%	65-144
OP90061-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	103	%	71-132
OP90061-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	95	%	73-130
OP90061-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	94	%	71-127
OP90061-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	98	%	68-131
OP90061-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	103	%	69-134
OP90061-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	92	%	65-140
OP90061-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	99	%	69-127
OP90061-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	83	%	53-142
OP90061-BS	754-91-6	PFOSA	BSP	REC	97	%	67-137
OP90061-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	65-136
OP90061-BS	2991-50-6	EtFOSAA	BSP	REC	97	%	61-135
OP90061-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP90061-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	94	%	64-140
OP90061-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	96	%	67-138
OP90061-MS	375-22-4	Perfluorobutanoic acid	MS	REC	85	%	73-129
OP90061-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	110	%	72-129
OP90061-MS	307-24-4	Perfluorohexanoic acid	MS	REC	95	%	72-129
OP90061-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	101	%	72-130
OP90061-MS	335-67-1	Perfluorooctanoic acid	MS	REC	97	%	71-133
OP90061-MS	375-95-1	Perfluorononanoic acid	MS	REC	116	%	69-130
OP90061-MS	335-76-2	Perfluorodecanoic acid	MS	REC	94	%	71-129
OP90061-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	97	%	69-133
OP90061-MS	307-55-1	Perfluorododecanoic acid	MS	REC	101	%	72-134
OP90061-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	100	%	65-144
OP90061-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	104	%	71-132
OP90061-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	97	%	73-130
OP90061-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	103	%	71-127
OP90061-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	68-131
OP90061-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	107	%	69-134
OP90061-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	95	%	65-140
OP90061-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	98	%	69-127
OP90061-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	82	%	53-142

* Sample used for QC is not from job FA93473

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90061-MS	754-91-6	PFOSA	MS	REC	101	%	67-137
OP90061-MS	2355-31-9	MeFOSAA	MS	REC	101	%	65-136
OP90061-MS	2991-50-6	EtFOSAA	MS	REC	100	%	61-135
OP90061-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP90061-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	95	%	64-140
OP90061-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	96	%	67-138
OP90061-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90061-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90061-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP90061-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90061-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90061-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90061-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90061-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90061-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90061-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90061-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90061-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90061-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90061-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90061-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90061-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90061-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90061-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90062	EPA 537M QSM5.3 B-15						
OP90062-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP90062-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	99	%	72-129
OP90062-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP90062-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	98	%	72-130
OP90062-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	94	%	71-133
OP90062-BS	375-95-1	Perfluorononanoic acid	BSP	REC	111	%	69-130
OP90062-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	91	%	71-129
OP90062-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	92	%	69-133
OP90062-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	99	%	72-134
OP90062-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	94	%	65-144
OP90062-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP90062-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	93	%	73-130

* Sample used for QC is not from job FA93473

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90062-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	93	%	71-127
OP90062-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP90062-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	97	%	69-134
OP90062-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	88	%	65-140
OP90062-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP90062-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	81	%	53-142
OP90062-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP90062-BS	2355-31-9	MeFOSAA	BSP	REC	95	%	65-136
OP90062-BS	2991-50-6	EtFOSAA	BSP	REC	96	%	61-135
OP90062-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	93	%	63-143
OP90062-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	92	%	64-140
OP90062-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	91	%	67-138
OP90062-MS	375-22-4	Perfluorobutanoic acid	MS	REC	86	%	73-129
OP90062-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	105	%	72-129
OP90062-MS	307-24-4	Perfluorohexanoic acid	MS	REC	94	%	72-129
OP90062-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	99	%	72-130
OP90062-MS	335-67-1	Perfluorooctanoic acid	MS	REC	97	%	71-133
OP90062-MS	375-95-1	Perfluorononanoic acid	MS	REC	112	%	69-130
OP90062-MS	335-76-2	Perfluorodecanoic acid	MS	REC	91	%	71-129
OP90062-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	93	%	69-133
OP90062-MS	307-55-1	Perfluorododecanoic acid	MS	REC	99	%	72-134
OP90062-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	92	%	65-144
OP90062-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	103	%	71-132
OP90062-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	95	%	73-130
OP90062-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	98	%	71-127
OP90062-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	94	%	68-131
OP90062-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	101	%	69-134
OP90062-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	89	%	65-140
OP90062-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	95	%	69-127
OP90062-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	77	%	53-142
OP90062-MS	754-91-6	PFOSA	MS	REC	100	%	67-137
OP90062-MS	2355-31-9	MeFOSAA	MS	REC	100	%	65-136
OP90062-MS	2991-50-6	EtFOSAA	MS	REC	97	%	61-135
OP90062-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP90062-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	94	%	64-140
OP90062-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	95	%	67-138
OP90062-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	5	%	30
OP90062-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90062-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP90062-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90062-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90062-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90062-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90062-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90062-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93473

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93473
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 02/23/22 thru 02/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90062-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90062-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90062-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90062-DUP	754-91-6	PFOSA	DUP	RPD	200	%	30
OP90062-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90062-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90062-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90062-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90062-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93473

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1224-IBLK	2Q86874.D	1	03/14/22	JB	n/a	n/a	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20, FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	109%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	114%	50-150%

Instrument Blank

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1224-IBLK	2Q86874.D	1	03/14/22	JB	n/a	n/a	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20, FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	111%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	115%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSA	124%	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	107%	50-150%
	13C2-6:2FTS	117%	50-150%
	13C2-8:2FTS	117%	50-150%
	13C3-HFPO-DA	139%	50-150%

Instrument Blank

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1225-IBLK	2Q86969.D	1	03/15/22	JB	n/a	n/a	S2Q1225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-9, FA93473-10, FA93473-11, FA93473-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	113%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	110%	50-150%
	13C4-PFHpA	117%	50-150%
	13C8-PFOA	113%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	128%	50-150%

Instrument Blank

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1225-IBLK	2Q86969.D	1	03/15/22	JB	n/a	n/a	S2Q1225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-9, FA93473-10, FA93473-11, FA93473-19

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	119%	50-150%
	13C2-PFDoDA	122%	50-150%
	13C2-PFTeDA	118%	50-150%
	13C3-PFBS	112%	50-150%
	13C3-PFHxS	116%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	129%	50-150%
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	130%	50-150%
	d5-EtFOSAA	127%	50-150%
	13C2-4:2FTS	114%	50-150%
	13C2-6:2FTS	120%	50-150%
	13C2-8:2FTS	124%	50-150%
	13C3-HFPO-DA	120%	50-150%

Method Blank Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-MB	2Q86911.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	103%	50-150%

Method Blank Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-MB	2Q86911.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	80%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	107%	50-150%

Method Blank Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-MB	2Q86942.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	87%	50-150%
	13C6-PFDA	97%	50-150%

Method Blank Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-MB	2Q86942.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	81%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	106%	50-150%

Blank Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-BS	2Q86910.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.141	88	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.168	105	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.153	96	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.163	102	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.156	98	71-133
375-95-1	Perfluorononanoic acid	0.16	0.184	115	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.150	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.152	95	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.161	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.155	97	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.165	103	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.152	95	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.150	94	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.157	98	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.164	103	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.147	92	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.159	99	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.133	83	53-142
754-91-6	PFOSA	0.16	0.155	97	67-137
2355-31-9	MeFOSAA	0.16	0.159	99	65-136
2991-50-6	EtFOSAA	0.16	0.155	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.154	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.151	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.153	96	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.139	87	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	102%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-BS	2Q86910.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	107%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-BS	2Q86941.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.141	88	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.158	99	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.149	93	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.156	98	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.150	94	71-133
375-95-1	Perfluorononanoic acid	0.16	0.177	111	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.146	91	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.147	92	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.158	99	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.150	94	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.160	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.148	93	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.149	93	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.148	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.155	97	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.141	88	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.154	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.129	81	53-142
754-91-6	PFOSA	0.16	0.153	96	67-137
2355-31-9	MeFOSAA	0.16	0.152	95	65-136
2991-50-6	EtFOSAA	0.16	0.154	96	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.148	93	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.147	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.146	91	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.142	89	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	106%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-BS	2Q86941.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	106%	50-150%
	13C2-6:2FTS	110%	50-150%
	13C2-8:2FTS	113%	50-150%
	13C3-HFPO-DA	120%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-MS	2Q86913.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224
FA93473-2	2Q86912.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	Compound	FA93473-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.017	U	0.167	0.141	85	73-129
2706-90-3	Perfluoropentanoic acid	0.0083	U	0.167	0.184	110	72-129
307-24-4	Perfluorohexanoic acid	0.0083	U	0.167	0.158	95	72-129
375-85-9	Perfluoroheptanoic acid	0.0083	U	0.167	0.168	101	72-130
335-67-1	Perfluorooctanoic acid	0.0083	U	0.167	0.162	97	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.193	116	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.156	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.161	97	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.169	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.167	100	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.174	104	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.167	0.161	97	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.167	0.171	103	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0031	J	0.167	0.163	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.167	0.179	107	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0023	J	0.167	0.158	95	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.163	98	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.137	82	53-142
754-91-6	PFOSA	0.0083	U	0.167	0.169	101	67-137
2355-31-9	MeFOSAA	0.017	U	0.167	0.169	101	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.167	100	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.160	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.159	95	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.160	96	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.145	87	60-140

CAS No.	ID Standard Recoveries	MS	FA93473-2	Limits
	13C4-PFBA	76%	72%	50-150%
	13C5-PFPeA	68%	64%	50-150%
	13C5-PFHxA	68%	64%	50-150%
	13C4-PFHpA	84%	78%	50-150%
	13C8-PFOA	85%	80%	50-150%
	13C9-PFNA	89%	84%	50-150%
	13C6-PFDA	100%	92%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-MS	2Q86913.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224
FA93473-2	2Q86912.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	ID Standard Recoveries	MS	FA93473-2	Limits
	13C7-PFUnDA	98%	89%	50-150%
	13C2-PFDoDA	87%	79%	50-150%
	13C2-PFTeDA	80%	70%	50-150%
	13C3-PFBS	77%	72%	50-150%
	13C3-PFHxS	87%	80%	50-150%
	13C8-PFOS	94%	86%	50-150%
	13C8-FOSA	92%	86%	50-150%
	d3-MeFOSAA	98%	90%	50-150%
	d5-EtFOSAA	96%	90%	50-150%
	13C2-4:2FTS	79%	71%	50-150%
	13C2-6:2FTS	103%	93%	50-150%
	13C2-8:2FTS	104%	92%	50-150%
	13C3-HFPO-DA		91%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-MS	2Q86944.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224
FA93473-23	2Q86943.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	Compound	FA93473-23 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.018	U	0.167	0.143	86	73-129
2706-90-3	Perfluoropentanoic acid	0.0091	U	0.167	0.175	105	72-129
307-24-4	Perfluorohexanoic acid	0.0091	U	0.167	0.157	94	72-129
375-85-9	Perfluoroheptanoic acid	0.0091	U	0.167	0.165	99	72-130
335-67-1	Perfluorooctanoic acid	0.0091	U	0.167	0.161	97	71-133
375-95-1	Perfluorononanoic acid	0.0091	U	0.167	0.186	112	69-130
335-76-2	Perfluorodecanoic acid	0.0091	U	0.167	0.152	91	71-129
2058-94-8	Perfluoroundecanoic acid	0.0091	U	0.167	0.155	93	69-133
307-55-1	Perfluorododecanoic acid	0.0091	U	0.167	0.165	99	72-134
72629-94-8	Perfluorotridecanoic acid	0.0091	U	0.167	0.153	92	65-144
376-06-7	Perfluorotetradecanoic acid	0.0091	U	0.167	0.172	103	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0091	U	0.167	0.159	95	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0091	U	0.167	0.163	98	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0091	U	0.167	0.156	94	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0091	U	0.167	0.169	101	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0091	U	0.167	0.149	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0091	U	0.167	0.159	95	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0091	U	0.167	0.129	77	53-142
754-91-6	PFOSA	0.0091	U	0.167	0.166	100	67-137
2355-31-9	MeFOSAA	0.018	U	0.167	0.167	100	65-136
2991-50-6	EtFOSAA	0.018	U	0.167	0.162	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.018	U	0.167	0.160	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.018	U	0.167	0.157	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	0.167	0.158	95	67-138
13252-13-6	HFPO-DA (GenX)	0.018	U	0.167	0.149	89	60-140

CAS No.	ID Standard Recoveries	MS	FA93473-23	Limits
	13C4-PFBA	82%	75%	50-150%
	13C5-PFPeA	74%	68%	50-150%
	13C5-PFHxA	71%	66%	50-150%
	13C4-PFHpA	82%	75%	50-150%
	13C8-PFOA	82%	74%	50-150%
	13C9-PFNA	85%	76%	50-150%
	13C6-PFDA	92%	85%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-MS	2Q86944.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224
FA93473-23	2Q86943.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	ID Standard Recoveries	MS	FA93473-23	Limits
	13C7-PFUnDA	88%	85%	50-150%
	13C2-PFDoDA	79%	76%	50-150%
	13C2-PFTeDA	66%	59%	50-150%
	13C3-PFBS	79%	74%	50-150%
	13C3-PFHxS	84%	77%	50-150%
	13C8-PFOS	84%	76%	50-150%
	13C8-FOSA	84%	77%	50-150%
	d3-MeFOSAA	89%	87%	50-150%
	d5-EtFOSAA	90%	90%	50-150%
	13C2-4:2FTS	82%	73%	50-150%
	13C2-6:2FTS	99%	87%	50-150%
	13C2-8:2FTS	101%	88%	50-150%
	13C3-HFPO-DA		86%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-DUP	2Q86915.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224
FA93473-5	2Q86914.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	Compound	FA93473-5 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.017 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0083 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0083 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0083 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0083 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0083 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0083 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0083 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0083 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0083 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0083 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083 U		ND		nc	30
754-91-6	PFOSA	0.0083 U		ND		nc	30
2355-31-9	MeFOSAA	0.017 U		ND		nc	30
2991-50-6	EtFOSAA	0.017 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93473-5	Limits
	13C4-PFBA	79%	80%	50-150%
	13C5-PFPeA	71%	71%	50-150%
	13C5-PFHxA	70%	70%	50-150%
	13C4-PFHpA	85%	84%	50-150%
	13C8-PFOA	86%	84%	50-150%
	13C9-PFNA	89%	85%	50-150%
	13C6-PFDA	98%	94%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90061-DUP	2Q86915.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224
FA93473-5	2Q86914.D	1	03/15/22	JB	03/03/22	OP90061	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-1, FA93473-2, FA93473-3, FA93473-4, FA93473-5, FA93473-6, FA93473-7, FA93473-8, FA93473-9, FA93473-10, FA93473-11, FA93473-12, FA93473-13, FA93473-14, FA93473-15, FA93473-16, FA93473-17, FA93473-18, FA93473-19, FA93473-20

CAS No.	ID Standard Recoveries	DUP	FA93473-5	Limits
	13C7-PFUnDA	96%	90%	50-150%
	13C2-PFDoDA	84%	79%	50-150%
	13C2-PFTeDA	63%	67%	50-150%
	13C3-PFBS	79%	78%	50-150%
	13C3-PFHxS	88%	85%	50-150%
	13C8-PFOS	90%	89%	50-150%
	13C8-FOSA	94%	90%	50-150%
	d3-MeFOSAA	93%	90%	50-150%
	d5-EtFOSAA	92%	90%	50-150%
	13C2-4:2FTS	76%	76%	50-150%
	13C2-6:2FTS	100%	96%	50-150%
	13C2-8:2FTS	98%	95%	50-150%
	13C3-HFPO-DA		98%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-DUP	2Q86946.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224
FA93473-30	2Q86945.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	Compound	FA93473-30 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0252		0.0266		5	30
2706-90-3	Perfluoropentanoic acid	0.0026	J	0.0026	J	0	30
307-24-4	Perfluorohexanoic acid	0.0080	U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080	U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080	U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0080	U	0.0024	J	200*	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93473-30	Limits
	13C4-PFBA	84%	89%	50-150%
	13C5-PFPeA	78%	83%	50-150%
	13C5-PFHxA	77%	81%	50-150%
	13C4-PFHpA	85%	90%	50-150%
	13C8-PFOA	85%	87%	50-150%
	13C9-PFNA	85%	87%	50-150%
	13C6-PFDA	93%	94%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93473
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90062-DUP	2Q86946.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224
FA93473-30	2Q86945.D	1	03/15/22	JB	03/03/22	OP90062	S2Q1224

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93473-21, FA93473-22, FA93473-23, FA93473-24, FA93473-25, FA93473-26, FA93473-27, FA93473-28, FA93473-29, FA93473-30, FA93473-31, FA93473-32, FA93473-33, FA93473-34, FA93473-35, FA93473-36

CAS No.	ID Standard Recoveries	DUP	FA93473-30	Limits
	13C7-PFUnDA	88%	93%	50-150%
	13C2-PFDoDA	79%	85%	50-150%
	13C2-PFTeDA	69%	79%	50-150%
	13C3-PFBS	82%	90%	50-150%
	13C3-PFHxS	86%	93%	50-150%
	13C8-PFOS	88%	89%	50-150%
	13C8-FOSA	87%	84%	50-150%
	d3-MeFOSAA	89%	91%	50-150%
	d5-EtFOSAA	89%	93%	50-150%
	13C2-4:2FTS	83%	90%	50-150%
	13C2-6:2FTS	96%	102%	50-150%
	13C2-8:2FTS	92%	95%	50-150%
	13C3-HFPO-DA	94%	102%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

S118 NS1010.01.06

SGS Job Number: FA93653

Sampling Date: 03/03/22



Report to:

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ATTN: Denise Rivers

Total number of pages in report: **41**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Sample Summary

Hydrogeologic, Inc.

Job No: FA93653

NASA TQN 21- SLF PFAS Assessment
Project No: S118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93653-1	03/03/22	13:40	RL	03/04/22	AQ	Ground Water	PFAS-DPT0183-055.0-20220303
FA93653-2	03/03/22	14:47	RL	03/04/22	AQ	Ground Water	S118-DPT1006-005.0-20220303
FA93653-3	03/03/22	14:48	RL	03/04/22	AQ	Ground Water	S118-DPT1006-015.0-20220303
FA93653-4	03/03/22	15:12	RL	03/04/22	AQ	Ground Water	S118-DPT1006-025.0-20220303
FA93653-5	03/03/22	15:31	RL	03/04/22	AQ	Ground Water	S118-DPT1006-035.0-20220303
FA93653-6	03/03/22	15:31	RL	03/04/22	AQ	Ground Water	S118-FD-20220303-01
FA93653-7	03/03/22	15:51	RL	03/04/22	AQ	Ground Water	S118-DPT1006-045.0-20220303
FA93653-8	03/03/22	16:10	RL	03/04/22	AQ	Field Blank Water	S118-FB-20220303-01
FA93653-9	03/03/22	16:13	RL	03/04/22	AQ	Equipment Blank	S118-EB-20220303-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93653

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 3/23/2022 1:50:27 PM

On 03/04/2022, 8 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93653 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90146

Sample(s) FA93653-1MS, FA93653-2DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluorohexanoic acid, Perfluorooctanoic acid are outside control limits for sample OP90146-DUP. Probable cause is due to sample non-homogeneity.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA93653
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA93653-1	**PFAS-DPT0183-055.0-20220303**					
Perfluorobutanoic acid		0.0058 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0045 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0056 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0035 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0030 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0106	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0047 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FA93653-2	**S118-DPT1006-005.0-20220303**					
Perfluorobutanesulfonic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0237	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-3	**S118-DPT1006-015.0-20220303**					
Perfluorobutanoic acid		0.0057 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0044 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0384	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0239	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-4	**S118-DPT1006-025.0-20220303**					
Perfluorobutanoic acid		0.0074 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0119	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0531	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0033 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.192	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-5	**S118-DPT1006-035.0-20220303**					
Perfluorobutanoic acid		0.0088 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0068 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA93653
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/03/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanoic acid		0.0157	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0037 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0062 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0061 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0078 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0711	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.114	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-6	**S118-FD-20220303-01**					
Perfluorobutanoic acid		0.0087 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0067 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0152	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0062 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0073 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0683	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0033 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.111	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-7	**S118-DPT1006-045.0-20220303**					
Perfluorobutanoic acid		0.0041 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0037 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0063 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0213	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0107	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA93653-8	**S118-FB-20220303-01**					
No hits reported in this sample.						
FA93653-9	**S118-EB-20220303-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PFAS-DPT0183-055.0-20220303		
Lab Sample ID:	FA93653-1	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87496.D	1	03/22/22 06:53	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0058	0.017	0.0087	0.0043	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0045	0.0087	0.0043	0.0022	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0056	0.0087	0.0043	0.0022	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0031	0.0087	0.0043	0.0022	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0035	0.0087	0.0043	0.0022	ug/l	J
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0087	0.0043	0.0022	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0106	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0047	0.0087	0.0043	0.0022	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-DPT0183-055.0-20220303
Lab Sample ID: FA93653-1 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	69%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	71%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSAA	82%		50-150%
	d5-EtFOSAA	81%		50-150%
	13C2-4:2FTS	64%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	85%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1006-005.0-20220303		
Lab Sample ID:	FA93653-2	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87498.D	1	03/22/22 07:26	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0127	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0237	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1006-005.0-20220303		
Lab Sample ID:	FA93653-2	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	82%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	91%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	87%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1006-015.0-20220303
Lab Sample ID: FA93653-3 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87500.D	1	03/22/22 08:00	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0057	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0044	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0384	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0239	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1006-015.0-20220303		
Lab Sample ID:	FA93653-3	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	82%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	75%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	89%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1006-025.0-20220303
Lab Sample ID: FA93653-4 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87501.D	1	03/22/22 08:16	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0074	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0119	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0043	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0531	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0033	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.192	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1006-025.0-20220303
Lab Sample ID: FA93653-4 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	86%		50-150%
	13C2-PFTeDA	86%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	92%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	97%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1006-035.0-20220303
Lab Sample ID: FA93653-5 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87502.D	1	03/22/22 08:33	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0088	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0068	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0157	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0037	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0062	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0061	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0078	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0711	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.114	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1006-035.0-20220303		
Lab Sample ID:	FA93653-5	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	74%		50-150%
	13C6-PFDA	84%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	75%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	84%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	63%		50-150%
	13C2-6:2FTS	80%		50-150%
	13C2-8:2FTS	83%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220303-01
Lab Sample ID: FA93653-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87503.D	1	03/22/22 08:50	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0067	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0152	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0062	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0073	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0683	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0033	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.111	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220303-01
Lab Sample ID: FA93653-6 **Date Sampled:** 03/03/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	95%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	76%		50-150%
	d3-MeFOSAA	93%		50-150%
	d5-EtFOSAA	94%		50-150%
	13C2-4:2FTS	68%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	83%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1006-045.0-20220303
Lab Sample ID: FA93653-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87506.D	1	03/22/22 09:46	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0041	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0037	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0063	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0213	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0107	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1006-045.0-20220303		
Lab Sample ID:	FA93653-7	**Date Sampled:**	03/03/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	94%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	83%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	86%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220303-01
Lab Sample ID: FA93653-8
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87507.D	1	03/22/22 10:03	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FB-20220303-01		
Lab Sample ID:	FA93653-8	**Date Sampled:**	03/03/22
Matrix:	AQ - Field Blank Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	83%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	88%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	94%		50-150%
	d3-MeFOSAA	93%		50-150%
	d5-EtFOSAA	94%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	98%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220303-01
Lab Sample ID: FA93653-9
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/03/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87508.D	1	03/22/22 10:20	JB	03/08/22 09:30	OP90146	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220303-01
Lab Sample ID: FA93653-9 **Date Sampled:** 03/03/22
Matrix: AQ - Equipment Blank **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	80%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	86%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	92%		50-150%
	d3-MeFOSAA	92%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	97%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA93653

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	PFAS-DPT0183-055.0-20220303	3/3/22	1340	RL	GW	2		X								X	
2	S118-DPT1006-005.0-20220303	3/3/22	1447	RL	GW	2		X								X	
3	S118-DPT1006-015.0-20220303	3/3/22	1458	RL	GW	2		X								X	
4	S118-DPT1006-025.0-20220303	3/3/22	1512	RL	GW	2		X								X	
5	S118-DPT1006-035.0-20220303	3/3/22	1531	RL	GW	2		X								X	
6	S118-FD-20220303-01	3/3/22	1531	RL	GW	2		X								X	
7	S118-DPT1006-045.0-20220303	3/3/22	1551	RL	GW	2		X								X	
8	S118-FB-20220303-01	3/3/22	1610	RL	GW	2		X								X	
9	S118-EB-20220303-01	3/3/22	1613	RL	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL / HGL	3-9-2022 1553	2	3	3/4/22 17:10	4 3/4/22 1710
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.2c, 2.2c, 3.1c CIR

http://www.sgs.com/en/terms-and-conditions

SGS_S018_COC_20220303 Rev 031318

FA93653: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA93653 **Client:** HGL, INC. **Project:** S118 PFAS ASSESSMENT

Date / Time Received: 3/4/2022 5:10:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2); Cooler 2: (4.2); Cooler 3: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.6); Cooler 2: (4.6); Cooler 3: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 3/4/2022 5:10:00 PM Reviewer: _____ Date: _____

FA93653: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93653
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90146	EPA 537M QSM5.3 B-15						
OP90146-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	94	%	73-129
OP90146-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	108	%	72-129
OP90146-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	100	%	72-129
OP90146-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	104	%	72-130
OP90146-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	102	%	71-133
OP90146-BS	375-95-1	Perfluorononanoic acid	BSP	REC	117	%	69-130
OP90146-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	98	%	71-129
OP90146-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	99	%	69-133
OP90146-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP90146-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	99	%	65-144
OP90146-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	109	%	71-132
OP90146-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	101	%	73-130
OP90146-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	104	%	71-127
OP90146-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	101	%	68-131
OP90146-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	107	%	69-134
OP90146-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	65-140
OP90146-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	106	%	69-127
OP90146-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	85	%	53-142
OP90146-BS	754-91-6	PFOSA	BSP	REC	101	%	67-137
OP90146-BS	2355-31-9	MeFOSAA	BSP	REC	103	%	65-136
OP90146-BS	2991-50-6	EtFOSAA	BSP	REC	103	%	61-135
OP90146-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	101	%	63-143
OP90146-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	100	%	64-140
OP90146-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138
OP90146-MS	375-22-4	Perfluorobutanoic acid	MS	REC	97	%	73-129
OP90146-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	114	%	72-129
OP90146-MS	307-24-4	Perfluorohexanoic acid	MS	REC	105	%	72-129
OP90146-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	111	%	72-130
OP90146-MS	335-67-1	Perfluorooctanoic acid	MS	REC	108	%	71-133
OP90146-MS	375-95-1	Perfluorononanoic acid	MS	REC	125	%	69-130
OP90146-MS	335-76-2	Perfluorodecanoic acid	MS	REC	103	%	71-129
OP90146-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	103	%	69-133
OP90146-MS	307-55-1	Perfluorododecanoic acid	MS	REC	109	%	72-134
OP90146-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	107	%	65-144
OP90146-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	112	%	71-132
OP90146-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	106	%	73-130
OP90146-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	115	%	71-127
OP90146-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	108	%	68-131
OP90146-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	117	%	69-134
OP90146-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	100	%	65-140
OP90146-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	110	%	69-127
OP90146-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	91	%	53-142

* Sample used for QC is not from job FA93653

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93653
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/03/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90146-MS	754-91-6	PFOSA	MS	REC	109	%	67-137
OP90146-MS	2355-31-9	MeFOSAA	MS	REC	109	%	65-136
OP90146-MS	2991-50-6	EtFOSAA	MS	REC	110	%	61-135
OP90146-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	106	%	63-143
OP90146-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	105	%	64-140
OP90146-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	104	%	67-138
OP90146-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90146-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90146-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	200	%	30
OP90146-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90146-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	200	%	30
OP90146-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90146-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90146-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90146-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90146-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90146-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90146-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90146-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90146-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	1	%	30
OP90146-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90146-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	3	%	30
OP90146-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90146-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90146-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90146-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90146-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90146-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90146-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90146-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93653

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	108%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	121%	50-150%

Instrument Blank

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	117%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	124%	50-150%
	d3-MeFOSA	120%	50-150%
	d3-MeFOSAA	126%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	118%	50-150%
	13C2-8:2FTS	124%	50-150%
	13C3-HFPO-DA	116%	50-150%

Method Blank Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-MB	2Q87495.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	72%	50-150%
	13C5-PFHxA	70%	50-150%
	13C4-PFHpA	75%	50-150%
	13C8-PFOA	74%	50-150%
	13C9-PFNA	75%	50-150%
	13C6-PFDA	84%	50-150%

Method Blank Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-MB	2Q87495.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	83%	50-150%
	13C2-PFDoDA	75%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	73%	50-150%
	13C3-PFHxS	75%	50-150%
	13C8-PFOS	78%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	81%	50-150%

Blank Spike Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-BS	2Q87494.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.151	94	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.172	108	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.160	100	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.167	104	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.163	102	71-133
375-95-1	Perfluorononanoic acid	0.16	0.187	117	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.156	98	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.159	99	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.168	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.158	99	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.174	109	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.161	101	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.166	104	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.162	101	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.171	107	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.158	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.169	106	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.136	85	53-142
754-91-6	PFOSA	0.16	0.162	101	67-137
2355-31-9	MeFOSAA	0.16	0.164	103	65-136
2991-50-6	EtFOSAA	0.16	0.165	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.162	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.160	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.161	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.160	100	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	101%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-BS	2Q87494.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	98%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-MS	2Q87497.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231
FA93653-1	2Q87496.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	Compound	FA93653-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0058	J	0.167	0.167	97	73-129
2706-90-3	Perfluoropentanoic acid	0.0045	J	0.167	0.195	114	72-129
307-24-4	Perfluorohexanoic acid	0.0056	J	0.167	0.181	105	72-129
375-85-9	Perfluoroheptanoic acid	0.0031	J	0.167	0.188	111	72-130
335-67-1	Perfluorooctanoic acid	0.0035	J	0.167	0.183	108	71-133
375-95-1	Perfluorononanoic acid	0.0087	U	0.167	0.208	125	69-130
335-76-2	Perfluorodecanoic acid	0.0087	U	0.167	0.172	103	71-129
2058-94-8	Perfluoroundecanoic acid	0.0087	U	0.167	0.172	103	69-133
307-55-1	Perfluorododecanoic acid	0.0087	U	0.167	0.182	109	72-134
72629-94-8	Perfluorotridecanoic acid	0.0087	U	0.167	0.178	107	65-144
376-06-7	Perfluorotetradecanoic acid	0.0087	U	0.167	0.186	112	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0030	J	0.167	0.179	106	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0087	U	0.167	0.192	115	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0106		0.167	0.190	108	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0087	U	0.167	0.195	117	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0047	J	0.167	0.171	100	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0087	U	0.167	0.183	110	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0087	U	0.167	0.151	91	53-142
754-91-6	PFOSA	0.0087	U	0.167	0.182	109	67-137
2355-31-9	MeFOSAA	0.017	U	0.167	0.182	109	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.183	110	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.176	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.175	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.173	104	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.164	98	60-140

CAS No.	ID Standard Recoveries	MS	FA93653-1	Limits
	13C4-PFBA	68%	69%	50-150%
	13C5-PFPeA	65%	66%	50-150%
	13C5-PFHxA	65%	66%	50-150%
	13C4-PFHpA	76%	77%	50-150%
	13C8-PFOA	78%	80%	50-150%
	13C9-PFNA	83%	83%	50-150%
	13C6-PFDA	91%	92%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-MS	2Q87497.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231
FA93653-1	2Q87496.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	ID Standard Recoveries	MS	FA93653-1	Limits
	13C7-PFUnDA	91%	91%	50-150%
	13C2-PFDoDA	83%	85%	50-150%
	13C2-PFTeDA	78%	78%	50-150%
	13C3-PFBS	71%	71%	50-150%
	13C3-PFHxS	78%	79%	50-150%
	13C8-PFOS	84%	84%	50-150%
	13C8-FOSA	68%	80%	50-150%
	d3-MeFOSAA	80%	82%	50-150%
	d5-EtFOSAA	77%	81%	50-150%
	13C2-4:2FTS	65%	64%	50-150%
	13C2-6:2FTS	88%	88%	50-150%
	13C2-8:2FTS	92%	87%	50-150%
	13C3-HFPO-DA	83%	85%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-DUP	2Q87499.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231
FA93653-2	2Q87498.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	Compound	FA93653-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		0.0020	J	200*	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		0.0021	J	200*	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0022	J	0.0022	J	0	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0127		0.0126		1	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0237		0.0231		3	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93653-2	Limits
	13C4-PFBA	80%	77%	50-150%
	13C5-PFPeA	77%	74%	50-150%
	13C5-PFHxA	75%	73%	50-150%
	13C4-PFHpA	83%	81%	50-150%
	13C8-PFOA	84%	80%	50-150%
	13C9-PFNA	87%	83%	50-150%
	13C6-PFDA	96%	92%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93653
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90146-DUP	2Q87499.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231
FA93653-2	2Q87498.D	1	03/22/22	JB	03/08/22	OP90146	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93653-1, FA93653-2, FA93653-3, FA93653-4, FA93653-5, FA93653-6, FA93653-7, FA93653-8, FA93653-9

CAS No.	ID Standard Recoveries	DUP	FA93653-2	Limits
	13C7-PFUnDA	94%	90%	50-150%
	13C2-PFDoDA	89%	84%	50-150%
	13C2-PFTeDA	87%	82%	50-150%
	13C3-PFBS	80%	77%	50-150%
	13C3-PFHxS	84%	80%	50-150%
	13C8-PFOS	84%	84%	50-150%
	13C8-FOSA	95%	91%	50-150%
	d3-MeFOSAA	97%	91%	50-150%
	d5-EtFOSAA	98%	92%	50-150%
	13C2-4:2FTS	78%	74%	50-150%
	13C2-6:2FTS	94%	88%	50-150%
	13C2-8:2FTS	94%	91%	50-150%
	13C3-HFPO-DA		87%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

S118 NS1010.01.06

SGS Job Number: FA93654

Sampling Date: 03/04/22



Report to:

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Merritt Island, FL 32953
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Total number of pages in report: 32

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA93654

NASA TQN 21- SLF PFAS Assessment
Project No: S118 NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA93654-1	03/04/22	07:51	RL	03/04/22	AQ	Ground Water	S118-DPT1004-045.0-20220304
FA93654-2	03/04/22	08:46	RL	03/04/22	AQ	Ground Water	PFAS-DPT0074-055.0-20220304
FA93654-3	03/04/22	08:46	RL	03/04/22	AQ	Ground Water	PFAS-FD-20220304-1
FA93654-4	03/04/22	09:05	RL	03/04/22	AQ	Field Blank Water	S118-FB-20220304-01
FA93654-5	03/04/22	09:08	RL	03/04/22	AQ	Equipment Blank	S118-EB-20220304-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA93654

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 3/23/2022 1:48:35 PM

On 03/04/2022, 4 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA93654 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90145

Sample(s) FA93650-11DUP, FA93650-5MS were used as the QC samples indicated.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA93654
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA93654-1 **S118-DPT1004-045.0-20220304**

No hits reported in this sample.

FA93654-2 **PFAS-DPT0074-055.0-20220304**

No hits reported in this sample.

FA93654-3 **PFAS-FD-20220304-1**

No hits reported in this sample.

FA93654-4 **S118-FB-20220304-01**

No hits reported in this sample.

FA93654-5 **S118-EB-20220304-01**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-DPT1004-045.0-20220304
Lab Sample ID: FA93654-1 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87484.D	1	03/22/22 03:32	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1004-045.0-20220304		
Lab Sample ID:	FA93654-1	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	70%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	82%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	86%		50-150%
	d3-MeFOSAA	93%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	81%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-DPT0074-055.0-20220304
Lab Sample ID: FA93654-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87485.D	1	03/22/22 03:48	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-DPT0074-055.0-20220304		
Lab Sample ID:	FA93654-2	**Date Sampled:**	03/04/22
Matrix:	AQ - Ground Water	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	83%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-FD-20220304-1
Lab Sample ID: FA93654-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87486.D	1	03/22/22 04:05	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-FD-20220304-1
Lab Sample ID: FA93654-3 **Date Sampled:** 03/04/22
Matrix: AQ - Ground Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	82%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	86%		50-150%
	13C2-PFTeDA	83%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	90%		50-150%
	d3-MeFOSAA	91%		50-150%
	d5-EtFOSAA	91%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	85%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220304-01
Lab Sample ID: FA93654-4
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87489.D	1	03/22/22 04:55	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220304-01
Lab Sample ID: FA93654-4 **Date Sampled:** 03/04/22
Matrix: AQ - Field Blank Water **Date Received:** 03/04/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	79%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	89%		50-150%
	13C2-PFDoDA	85%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSAA	97%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	82%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220304-01
Lab Sample ID: FA93654-5
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 03/04/22
Date Received: 03/04/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q87490.D	1	03/22/22 05:12	JB	03/08/22 09:30	OP90145	S2Q1231
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-EB-20220304-01		
Lab Sample ID:	FA93654-5	**Date Sampled:**	03/04/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/04/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	79%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	94%		50-150%
	d3-MeFOSAA	99%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	92%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	90%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : FA93654 PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Robert Lynch Sampler 2:

Project Information

Project Name: S118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S118-DPT1004-045.0-20220304	3/4/22	0751	RL	GW	2		X								X	
2	PFAS-DPT0074-055.0-20220304	3/4/22	0846	RL	GW	2		X								X	
3	PFAS-FD-20220304-01	3/4/22	0846	RL	GW	2		X								X	
4	S118-FB-20220304-01	3/4/22	0905	RL	GW	2		X								X	
5	S118-EB-20220304-01	3/4/22	0908	RL	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL / HGL	3-4-2022 1555	2	3	3/4/22 17:10	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7	3/4/22	8 1710

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.6, 4.2, 2.2 ad

http://www.sgs.com/en/terms-and-conditions

SGS_S018_COC_20220304 Rev 031318

FA93654: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA93654 **Client:** HGL **Project:** S118 PFAS ASSESSMENT

Date / Time Received: 3/4/2022 5:10:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.0); Cooler 2: (2.6); Cooler 3: (4.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/4/2022 5:10:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93654
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90145	EPA 537M QSM5.3 B-15						
OP90145-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP90145-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	104	%	72-129
OP90145-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP90145-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP90145-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	101	%	71-133
OP90145-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP90145-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	95	%	71-129
OP90145-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP90145-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	101	%	72-134
OP90145-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	98	%	65-144
OP90145-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	107	%	71-132
OP90145-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	73-130
OP90145-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	97	%	71-127
OP90145-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	98	%	68-131
OP90145-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	103	%	69-134
OP90145-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	95	%	65-140
OP90145-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP90145-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	81	%	53-142
OP90145-BS	754-91-6	PFOSA	BSP	REC	99	%	67-137
OP90145-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	65-136
OP90145-BS	2991-50-6	EtFOSAA	BSP	REC	101	%	61-135
OP90145-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP90145-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	97	%	64-140
OP90145-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP90145-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	92	%	73-129
OP90145-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	117	%	72-129
OP90145-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	101	%	72-129
OP90145-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	106	%	72-130
OP90145-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	106	%	71-133
OP90145-MS*	375-95-1	Perfluorononanoic acid	MS	REC	119	%	69-130
OP90145-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	100	%	71-129
OP90145-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	102	%	69-133
OP90145-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	106	%	72-134
OP90145-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	96	%	65-144
OP90145-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	108	%	71-132
OP90145-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	104	%	73-130
OP90145-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	111	%	71-127
OP90145-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	109	%	68-131
OP90145-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	117	%	69-134
OP90145-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	118	%	65-140
OP90145-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	109	%	69-127
OP90145-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	84	%	53-142

* Sample used for QC is not from job FA93654

QC Evaluation: DOD QSM5.x Limits

Job Number: FA93654
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 03/04/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90145-MS*	754-91-6	PFOSA	MS	REC	108	%	67-137
OP90145-MS*	2355-31-9	MeFOSAA	MS	REC	109	%	65-136
OP90145-MS*	2991-50-6	EtFOSAA	MS	REC	104	%	61-135
OP90145-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	102	%	63-143
OP90145-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	101	%	64-140
OP90145-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	102	%	67-138
OP90145-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90145-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90145-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90145-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90145-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90145-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90145-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90145-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA93654

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	108%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	121%	50-150%

Instrument Blank

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1231-IBLK	2Q87449.D	1	03/21/22	JB	n/a	n/a	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	117%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	124%	50-150%
	d3-MeFOSA	120%	50-150%
	d3-MeFOSAA	126%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	118%	50-150%
	13C2-8:2FTS	124%	50-150%
	13C3-HFPO-DA	116%	50-150%

Method Blank Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MB	2Q87466.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	71%	50-150%
	13C4-PFHpA	75%	50-150%
	13C8-PFOA	74%	50-150%
	13C9-PFNA	75%	50-150%
	13C6-PFDA	82%	50-150%

Method Blank Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MB	2Q87466.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	73%	50-150%
	13C3-PFHxS	74%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	84%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	82%	50-150%

Blank Spike Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-BS	2Q87465.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.148	93	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.166	104	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.156	98	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.163	102	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.161	101	71-133
375-95-1	Perfluorononanoic acid	0.16	0.181	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.152	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.154	96	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.162	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.156	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.171	107	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.156	98	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.155	97	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.156	98	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.165	103	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.152	95	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.163	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.130	81	53-142
754-91-6	PFOSA	0.16	0.158	99	67-137
2355-31-9	MeFOSAA	0.16	0.158	99	65-136
2991-50-6	EtFOSAA	0.16	0.162	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.156	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.155	97	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.152	95	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.152	95	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	82%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	91%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-BS	2Q87465.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	86%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	91%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MS	2Q87468.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-5	2Q87467.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	Compound	FA93650-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0099	J	0.16	0.157	92	73-129
2706-90-3	Perfluoropentanoic acid	0.0352		0.16	0.223	117	72-129
307-24-4	Perfluorohexanoic acid	0.0442		0.16	0.206	101	72-129
375-85-9	Perfluoroheptanoic acid	0.0185		0.16	0.188	106	72-130
335-67-1	Perfluorooctanoic acid	0.0254		0.16	0.195	106	71-133
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.190	119	69-130
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.160	100	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.163	102	69-133
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.169	106	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.153	96	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.172	108	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0170		0.16	0.184	104	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0224		0.16	0.200	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.161		0.16	0.336	109	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0104		0.16	0.197	117	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.373		0.16	0.561	118	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.174	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.134	84	53-142
754-91-6	PFOSA	0.0080 U		0.16	0.172	108	67-137
2355-31-9	MeFOSAA	0.016 U		0.16	0.174	109	65-136
2991-50-6	EtFOSAA	0.016 U		0.16	0.166	104	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.163	102	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.0208		0.16	0.183	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.163	102	67-138
13252-13-6	HFPO-DA (GenX)	0.016 U		0.16	0.149	93	60-140

CAS No.	ID Standard Recoveries	MS	FA93650-5	Limits
	13C4-PFBA	65%	66%	50-150%
	13C5-PFPeA	61%	62%	50-150%
	13C5-PFHxA	62%	63%	50-150%
	13C4-PFHpA	77%	76%	50-150%
	13C8-PFOA	81%	81%	50-150%
	13C9-PFNA	84%	82%	50-150%
	13C6-PFDA	94%	94%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-MS	2Q87468.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-5	2Q87467.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	ID Standard Recoveries	MS	FA93650-5	Limits
	13C7-PFUnDA	93%	91%	50-150%
	13C2-PFDoDA	87%	86%	50-150%
	13C2-PFTeDA	73%	75%	50-150%
	13C3-PFBS	67%	69%	50-150%
	13C3-PFHxS	77%	76%	50-150%
	13C8-PFOS	83%	81%	50-150%
	13C8-FOSA	74%	86%	50-150%
	d3-MeFOSAA	95%	97%	50-150%
	d5-EtFOSAA	94%	96%	50-150%
	13C2-4:2FTS	69%	66%	50-150%
	13C2-6:2FTS	93%	91%	50-150%
	13C2-8:2FTS	102%	95%	50-150%
	13C3-HFPO-DA	81%	80%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-DUP	2Q87470.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-11	2Q87469.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	Compound	FA93650-11 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA93650-11	Limits
	13C4-PFBA	75%	78%	50-150%
	13C5-PFPeA	70%	73%	50-150%
	13C5-PFHxA	68%	70%	50-150%
	13C4-PFHpA	77%	80%	50-150%
	13C8-PFOA	79%	83%	50-150%
	13C9-PFNA	82%	85%	50-150%
	13C6-PFDA	91%	94%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA93654
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90145-DUP	2Q87470.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231
FA93650-11	2Q87469.D	1	03/21/22	JB	03/08/22	OP90145	S2Q1231

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA93654-1, FA93654-2, FA93654-3, FA93654-4, FA93654-5

CAS No.	ID Standard Recoveries	DUP	FA93650-11	Limits
	13C7-PFUnDA	90%	95%	50-150%
	13C2-PFDoDA	83%	88%	50-150%
	13C2-PFTeDA	71%	76%	50-150%
	13C3-PFBS	75%	77%	50-150%
	13C3-PFHxS	79%	81%	50-150%
	13C8-PFOS	83%	85%	50-150%
	13C8-FOSA	83%	88%	50-150%
	d3-MeFOSAA	91%	92%	50-150%
	d5-EtFOSAA	91%	96%	50-150%
	13C2-4:2FTS	71%	73%	50-150%
	13C2-6:2FTS	88%	92%	50-150%
	13C2-8:2FTS	93%	98%	50-150%
	13C3-HFPO-DA	83%	86%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA95742

Sampling Date: 05/16/22



Report to:

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Total number of pages in report: **642**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Ariel Hartney 407-425-6700

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA95742

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA95742-1	05/16/22	14:05	RLJV	05/17/22	AQ	Surface Water	S118-SW0005-000.0-20220516
FA95742-2	05/16/22	14:17	RLJV	05/17/22	AQ	Surface Water	S118-SW0006-000.0-20220516
FA95742-3	05/16/22	14:27	RLJV	05/17/22	AQ	Surface Water	S118-SW0007-000.0-20220516
FA95742-4	05/16/22	14:27	RLJV	05/17/22	AQ	Surface Water	S118-FD-20220516-01
FA95742-5	05/16/22	14:33	RLJV	05/17/22	AQ	Field Blank Water	S118-FB-20220516-01
FA95742-6	05/16/22	14:38	RLJV	05/17/22	AQ	Equipment Blank	S118-EB-20220516-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA95742

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 6/9/2022 2:21:58 PM

On 05/17/2022, 5 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 0.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA95742 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91428

Sample(s) FA95742-1MS, FA95742-2DUP, FA95742-1MS were used as the QC samples indicated.

Sample(s) FA95742-1, FA95742-2, FA95742-3, FA95742-4 have surrogates outside control limits.

OP91428-MB for 13C8-FOSA: Outside control limits.

FA95742-1 for 13C2-PFTeDA: Outside control limits.

FA95742-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.

FA95742-1: Confirmation run.

FA95742-2 for 13C2-PFTeDA: Outside control limits.

FA95742-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.

FA95742-2: Confirmation run.

FA95742-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA95742-3 for 13C2-PFTeDA: Outside control limits.

FA95742-4 for 13C2-PFTeDA: Outside control limits.

FA95742-4 for 13C8-FOSA: Outside control limits.

FA95742-4: Dilution required due to matrix interference (ID recovery standard failure).

FA95742-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

Matrix: AQ **Batch ID:** OP91510

Sample(s) FA95742-3, FA95742-4 have surrogates outside control limits.

FA95742-3: Confirmation run.

FA95742-4: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA95742
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 05/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA95742-1	**S118-SW0005-000.0-20220516**					
Perfluorobutanoic acid		0.0092 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0124	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0046 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0608	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.158	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA95742-2	**S118-SW0006-000.0-20220516**					
Perfluorobutanoic acid		0.0119 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0201	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0063 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0067 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0096	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.106	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.242	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA95742-3	**S118-SW0007-000.0-20220516**					
Perfluorobutanoic acid		0.0109 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0122	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0269	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0055 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0110	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0101	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0140	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.149	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0086	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.470	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA95742-4	**S118-FD-20220516-01**					
Perfluorobutanoic acid		0.0129 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0123	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0277	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0059 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA95742
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 05/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanoic acid		0.0113	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0102	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0145	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.143	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0083	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.476	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

FA95742-5 S118-FB-20220516-01

No hits reported in this sample.

FA95742-6 S118-EB-20220516-01

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	S118-SW0005-000.0-20220516		
Lab Sample ID:	FA95742-1	**Date Sampled:**	05/16/22
Matrix:	AQ - Surface Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92324.D	1	06/02/22 20:50	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2 [a]	2Q92346.D	5	06/03/22 13:00	JB	05/31/22 09:00	OP91428	S2Q1294

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0092	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0124	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0046	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0608	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.158	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0005-000.0-20220516		
Lab Sample ID:	FA95742-1	**Date Sampled:**	05/16/22
Matrix:	AQ - Surface Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%	84%	50-150%
	13C5-PFPeA	69%	80%	50-150%
	13C5-PFHxA	72%	78%	50-150%
	13C4-PFHpA	79%	84%	50-150%
	13C8-PFOA	83%	85%	50-150%
	13C9-PFNA	82%	82%	50-150%
	13C6-PFDA	83%	85%	50-150%
	13C7-PFUnDA	80%	81%	50-150%
	13C2-PFDoDA	73%	74%	50-150%
	13C2-PFTeDA	36% [c]	36%	50-150%
	13C3-PFBS	74%	83%	50-150%
	13C3-PFHxS	79%	86%	50-150%
	13C8-PFOS	79%	83%	50-150%
	13C8-FOSA	66%	71%	50-150%
	d3-MeFOSAA	77%	80%	50-150%
	d5-EtFOSAA	82%	90%	50-150%
	13C2-4:2FTS	75%	86%	50-150%
	13C2-6:2FTS	78%	84%	50-150%
	13C2-8:2FTS	83%	83%	50-150%
	13C3-HFPO-DA	72%	78%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits, Confirmed by batch QC.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220516
Lab Sample ID: FA95742-2 **Date Sampled:** 05/16/22
Matrix: AQ - Surface Water **Date Received:** 05/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92326.D	1	06/02/22 21:27	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2 [a]	2Q92348.D	5	06/03/22 13:38	JB	05/31/22 09:00	OP91428	S2Q1294

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0119	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0201	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0063	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0067	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0096	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.106	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.242	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0006-000.0-20220516		
Lab Sample ID:	FA95742-2	**Date Sampled:**	05/16/22
Matrix:	AQ - Surface Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%	87%	50-150%
	13C5-PFPeA	69%	82%	50-150%
	13C5-PFHxA	70%	80%	50-150%
	13C4-PFHpA	78%	85%	50-150%
	13C8-PFOA	81%	87%	50-150%
	13C9-PFNA	79%	85%	50-150%
	13C6-PFDA	81%	88%	50-150%
	13C7-PFUnDA	77%	84%	50-150%
	13C2-PFDoDA	73%	80%	50-150%
	13C2-PFTeDA	42% [c]	44% [c]	50-150%
	13C3-PFBS	74%	90%	50-150%
	13C3-PFHxS	78%	91%	50-150%
	13C8-PFOS	81%	95%	50-150%
	13C8-FOSA	74%	84%	50-150%
	d3-MeFOSAA	77%	80%	50-150%
	d5-EtFOSAA	81%	91%	50-150%
	13C2-4:2FTS	73%	88%	50-150%
	13C2-6:2FTS	82%	87%	50-150%
	13C2-8:2FTS	82%	87%	50-150%
	13C3-HFPO-DA	70%	90%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits, Confirmed by batch QC.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S118-SW0007-000.0-20220516
Lab Sample ID: FA95742-3 **Date Sampled:** 05/16/22
Matrix: AQ - Surface Water **Date Received:** 05/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92328.D	1	06/02/22 22:05	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2 [a]	2Q92725.D	1	06/08/22 12:48	JB	06/06/22 08:30	OP91510	S2Q1298

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0109	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0122	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0269	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0055	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0110	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0101	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0140	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.149	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0086	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.470	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0007-000.0-20220516		
Lab Sample ID:	FA95742-3	**Date Sampled:**	05/16/22
Matrix:	AQ - Surface Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%	52%	50-150%
	13C5-PFPeA	64%	48% [c]	50-150%
	13C5-PFHxA	67%	48% [c]	50-150%
	13C4-PFHpA	75%	54%	50-150%
	13C8-PFOA	81%	55%	50-150%
	13C9-PFNA	81%	56%	50-150%
	13C6-PFDA	83%	57%	50-150%
	13C7-PFUnDA	79%	54%	50-150%
	13C2-PFDoDA	74%	49% [c]	50-150%
	13C2-PFTeDA	43% [c]	26% [c]	50-150%
	13C3-PFBS	72%	53%	50-150%
	13C3-PFHxS	77%	59%	50-150%
	13C8-PFOS	83%	55%	50-150%
	13C8-FOSA	66%	48% [c]	50-150%
	d3-MeFOSAA	72%	46% [c]	50-150%
	d5-EtFOSAA	77%	51%	50-150%
	13C2-4:2FTS	72%	52%	50-150%
	13C2-6:2FTS	84%	54%	50-150%
	13C2-8:2FTS	84%	57%	50-150%
	13C3-HFPO-DA	65%	55%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S118-FD-20220516-01		
Lab Sample ID:	FA95742-4	**Date Sampled:**	05/16/22
Matrix:	AQ - Surface Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92329.D	1	06/02/22 22:24	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2 [a]	2Q92726.D	1	06/08/22 13:07	JB	06/06/22 08:30	OP91510	S2Q1298
Run #3 [b]	2Q92351.D	5	06/03/22 14:34	JB	05/31/22 09:00	OP91428	S2Q1294

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0129	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0123	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0277	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0059	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0113	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0102	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0145	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.143	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.476	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220516-01
Lab Sample ID: FA95742-4 **Date Sampled:** 05/16/22
Matrix: AQ - Surface Water **Date Received:** 05/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	72%	45% [e]	86%	50-150%
	13C5-PFPeA	66%	40% [e]	82%	50-150%
	13C5-PFHxA	69%	40% [e]	82%	50-150%
	13C4-PFHpA	79%	45% [e]	88%	50-150%
	13C8-PFOA	84%	46% [e]	88%	50-150%
	13C9-PFNA	82%	47% [e]	85%	50-150%
	13C6-PFDA	82%	49% [e]	89%	50-150%
	13C7-PFUnDA	76%	47% [e]	84%	50-150%
	13C2-PFDoDA	66%	44% [e]	73%	50-150%
	13C2-PFTeDA	27% [e]	27% [e]	31%	50-150%
	13C3-PFBS	73%	45% [e]	89%	50-150%
	13C3-PFHxS	79%	50%	88%	50-150%
	13C8-PFOS	79%	48% [e]	92%	50-150%
	13C8-FOSA	45% [e]	44% [e]	56%	50-150%
	d3-MeFOSAA	72%	40% [e]	83%	50-150%
	d5-EtFOSAA	74%	45% [e]	84%	50-150%
	13C2-4:2FTS	73%	46% [e]	93%	50-150%
	13C2-6:2FTS	84%	48% [e]	90%	50-150%
	13C2-8:2FTS	79%	50%	88%	50-150%
	13C3-HFPO-DA	72%	44% [e]	89%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S118-FB-20220516-01		
Lab Sample ID:	FA95742-5	**Date Sampled:**	05/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92332.D	1	06/02/22 23:20	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220516-01
Lab Sample ID: FA95742-5 **Date Sampled:** 05/16/22
Matrix: AQ - Field Blank Water **Date Received:** 05/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	79%		50-150%
	13C6-PFDA	81%		50-150%
	13C7-PFUnDA	80%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	79%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	83%		50-150%
	d3-MeFOSAA	78%		50-150%
	d5-EtFOSAA	83%		50-150%
	13C2-4:2FTS	78%		50-150%
	13C2-6:2FTS	76%		50-150%
	13C2-8:2FTS	77%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S118-EB-20220516-01		
Lab Sample ID:	FA95742-6	**Date Sampled:**	05/16/22
Matrix:	AQ - Equipment Blank	**Date Received:**	05/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q92333.D	1	06/02/22 23:39	JB	05/31/22 09:00	OP91428	S2Q1293
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220516-01
Lab Sample ID: FA95742-6 **Date Sampled:** 05/16/22
Matrix: AQ - Equipment Blank **Date Received:** 05/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		50-150%
	13C5-PFPeA	86%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	87%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	87%		50-150%
	13C2-PFDoDA	87%		50-150%
	13C2-PFTeDA	85%		50-150%
	13C3-PFBS	89%		50-150%
	13C3-PFHxS	91%		50-150%
	13C8-PFOS	87%		50-150%
	13C8-FOSA	88%		50-150%
	d3-MeFOSAA	86%		50-150%
	d5-EtFOSAA	92%		50-150%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	85%		50-150%
	13C3-HFPO-DA	85%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando

FA95742

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX. 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote #	SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32937
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: Robert Lynch Sampler 2: Justin Vojak

Project Information

Project Name: S118 PFAS SW Sampling
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LCQSM537/DODFL-24 analytes + GenX	LAB USE ONLY
1	S118-SW0005-000.0-20220516	5/16/22	1405	RL	SW	2		X								X	
2	S118-SW0006-000.0-20220516	5/16/22	1417	RL	SW	2		X								X	
3	S118-SW0007-000.0-20220516	5/16/22	1427	RL	SW	2		X								X	
4	S118-FD-20220516-01	5/16/22	1427	RL	SW	2		X								X	
5	S118-FB-20220516-01	5/16/22	1433	RL	WW	2		X								X	
6	S118-EB-20220516-01	5/16/22	1438	RL	WW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

INITIAL ASSESSMENT SM

LABEL VERIFICATION TM

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
RL HGL	5-17-22 1559	2	3	5/17/22 1730	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8 5/17/22 19:30

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 0.2 0.5 0.1

http://www.sgs.com/en/terms-and-conditions

SGS_S118_COC Rev 031318

SGS Sample Receipt Summary

Job Number: FA95742 **Client:** HGL **Project:** S118 PFAS SW SAMPLING

Date / Time Received: 5/17/2022 7:00:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.2);

Cooler Temps (Corrected) °C: Cooler 1: (0.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 5/17/2022 7:00:00 PM Reviewer: _____ Date: _____

FA95742: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95742
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 05/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91428	EPA 537M QSM5.3 B-15						
OP91428-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP91428-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	97	%	72-129
OP91428-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP91428-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	94	%	72-130
OP91428-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	94	%	71-133
OP91428-BS	375-95-1	Perfluorononanoic acid	BSP	REC	93	%	69-130
OP91428-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	93	%	71-129
OP91428-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	69-133
OP91428-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	93	%	72-134
OP91428-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	91	%	65-144
OP91428-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	96	%	71-132
OP91428-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	94	%	72-130
OP91428-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	96	%	71-127
OP91428-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	96	%	68-131
OP91428-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	96	%	69-134
OP91428-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	94	%	65-140
OP91428-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP91428-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	98	%	53-142
OP91428-BS	754-91-6	PFOSA	BSP	REC	92	%	67-137
OP91428-BS	2355-31-9	MeFOSAA	BSP	REC	95	%	65-136
OP91428-BS	2991-50-6	EtFOSAA	BSP	REC	94	%	61-135
OP91428-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	92	%	63-143
OP91428-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	94	%	64-140
OP91428-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	96	%	67-138
OP91428-MS	375-22-4	Perfluorobutanoic acid	MS	REC	89	%	73-129
OP91428-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	97	%	72-129
OP91428-MS	307-24-4	Perfluorohexanoic acid	MS	REC	90	%	72-129
OP91428-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	94	%	72-130
OP91428-MS	335-67-1	Perfluorooctanoic acid	MS	REC	93	%	71-133
OP91428-MS	375-95-1	Perfluorononanoic acid	MS	REC	101	%	69-130
OP91428-MS	335-76-2	Perfluorodecanoic acid	MS	REC	93	%	71-129
OP91428-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	91	%	69-133
OP91428-MS	307-55-1	Perfluorododecanoic acid	MS	REC	90	%	72-134
OP91428-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	66	%	65-144
OP91428-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	87	%	71-132
OP91428-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	90	%	72-130
OP91428-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	96	%	71-127
OP91428-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	87	%	68-131
OP91428-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	93	%	69-134
OP91428-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	88	%	65-140
OP91428-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	91	%	69-127
OP91428-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	88	%	53-142

* Sample used for QC is not from job FA95742

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95742
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 05/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91428-MS	754-91-6	PFOSA	MS	REC	93	%	67-137
OP91428-MS	2355-31-9	MeFOSAA	MS	REC	97	%	65-136
OP91428-MS	2991-50-6	EtFOSAA	MS	REC	93	%	61-135
OP91428-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	89	%	63-143
OP91428-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	88	%	64-140
OP91428-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	93	%	67-138
OP91428-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	14	%	30
OP91428-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	26	%	30
OP91428-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	2	%	30
OP91428-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	8	%	30
OP91428-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	5	%	30
OP91428-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91428-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91428-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91428-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91428-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91428-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91428-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	6	%	30
OP91428-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	9	%	30
OP91428-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	4	%	30
OP91428-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	11	%	30
OP91428-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	8	%	30
OP91428-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91428-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91428-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91428-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91428-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91428-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91428-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91428-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA95742

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1293-IBLK	2Q92305.D	1	06/02/22	JB	n/a	n/a	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	61%	50-150%
	13C5-PFPeA	59%	50-150%
	13C5-PFHxA	58%	50-150%
	13C4-PFHpA	62%	50-150%
	13C8-PFOA	61%	50-150%
	13C9-PFNA	62%	50-150%
	13C6-PFDA	63%	50-150%

Instrument Blank

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1293-IBLK	2Q92305.D	1	06/02/22	JB	n/a	n/a	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	63%	50-150%
	13C2-PFDoDA	63%	50-150%
	13C2-PFTeDA	60%	50-150%
	13C3-PFBS	62%	50-150%
	13C3-PFHxS	62%	50-150%
	13C8-PFOS	63%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSA	111%	50-150%
	d3-MeFOSAA	60%	50-150%
	d5-EtFOSAA	62%	50-150%
	13C2-4:2FTS	62%	50-150%
	13C2-6:2FTS	62%	50-150%
	13C2-8:2FTS	59%	50-150%

Instrument Blank

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1294-IBLK	2Q92340.D	1	06/03/22	JB	n/a	n/a	S2Q1294

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-4

CAS No.	Compound	Result	RL	MDL	Units	Q
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	76%	50-150%
	13C5-PFPeA	73%	50-150%
	13C5-PFHxA	73%	50-150%
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	75%	50-150%
	13C9-PFNA	74%	50-150%
	13C6-PFDA	76%	50-150%
	13C7-PFUnDA	77%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	80%	50-150%
	13C8-FOSA	75%	50-150%
	d3-MeFOSA	67%	50-150%
	d3-MeFOSAA	76%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	76%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	72%	50-150%
	13C3-HFPO-DA	80%	50-150%

Method Blank Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-MB	2Q92309.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	58%	50-150%
	13C5-PFPeA	57%	50-150%
	13C5-PFHxA	59%	50-150%
	13C4-PFHpA	62%	50-150%
	13C8-PFOA	65%	50-150%
	13C9-PFNA	65%	50-150%
	13C6-PFDA	68%	50-150%

Method Blank Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-MB	2Q92309.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	70%	50-150%
	13C2-PFDoDA	69%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	74%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	76%	50-150%
	13C8-FOSA	46%* [a]	50-150%
	d3-MeFOSAA	63%	50-150%
	d5-EtFOSAA	63%	50-150%
	13C2-4:2FTS	74%	50-150%
	13C2-6:2FTS	77%	50-150%
	13C2-8:2FTS	73%	50-150%
	13C3-HFPO-DA	58%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-BS	2Q92308.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.149	93	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.155	97	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.149	93	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.151	94	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.151	94	71-133
375-95-1	Perfluorononanoic acid	0.16	0.148	93	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.149	93	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.148	93	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.149	93	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.145	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.154	96	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.151	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.153	96	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.153	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.153	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.151	94	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.154	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.157	98	53-142
754-91-6	PFOSA	0.16	0.147	92	67-137
2355-31-9	MeFOSAA	0.16	0.152	95	65-136
2991-50-6	EtFOSAA	0.16	0.150	94	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.147	92	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.150	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.154	96	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.153	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	82%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	85%	50-150%
	13C9-PFNA	85%	50-150%
	13C6-PFDA	85%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-BS	2Q92308.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	85%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	78%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	82%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-MS	2Q92347.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294
FA95742-1	2Q92324.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-1 [a]	2Q92346.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	Compound	FA95742-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0092	J	0.16	0.152	89	73-129
2706-90-3	Perfluoropentanoic acid	0.0031	J	0.16	0.158	97	72-129
307-24-4	Perfluorohexanoic acid	0.0124		0.16	0.157	90	72-129
375-85-9	Perfluoroheptanoic acid	0.0030	J	0.16	0.153	94	72-130
335-67-1	Perfluorooctanoic acid	0.0045	J	0.16	0.154	93	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.162	101	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.149	93	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.146	91	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.144	90	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.105	66	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.139	87	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0046	J	0.16	0.149	90	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0058	J	0.16	0.160	96	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0608		0.16	0.200	87	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0028	J	0.16	0.152	93	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.158		0.16	0.298	88	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.145	91	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.141	88	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.148	93	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.155	97	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.148	93	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.142	89	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.140	88	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.149	93	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.146	91	60-140

CAS No.	ID Standard Recoveries	MS	FA95742-1	FA95742-1	Limits
	13C4-PFBA	88%	74%	84%	50-150%
	13C5-PFPeA	82%	69%	80%	50-150%
	13C5-PFHxA	82%	72%	78%	50-150%
	13C4-PFHpA	88%	79%	84%	50-150%
	13C8-PFOA	88%	83%	85%	50-150%
	13C9-PFNA	85%	82%	82%	50-150%
	13C6-PFDA	86%	83%	85%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-MS	2Q92347.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294
FA95742-1	2Q92324.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-1 [a]	2Q92346.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	ID Standard Recoveries	MS	FA95742-1	FA95742-1	Limits
	13C7-PFUnDA	87%	80%	81%	50-150%
	13C2-PFDoDA	81%	73%	74%	50-150%
	13C2-PFTeDA	40%* [b]	36%* [b]	36%*	50-150%
	13C3-PFBS	89%	74%	83%	50-150%
	13C3-PFHxS	94%	79%	86%	50-150%
	13C8-PFOS	90%	79%	83%	50-150%
	13C8-FOSA	63%	66%	71%	50-150%
	d3-MeFOSAA	83%	77%	80%	50-150%
	d5-EtFOSAA	88%	82%	90%	50-150%
	13C2-4:2FTS	90%	75%	86%	50-150%
	13C2-6:2FTS	97%	78%	84%	50-150%
	13C2-8:2FTS	87%	83%	83%	50-150%
	13C3-HFPO-DA	96%	72%	78%	50-150%

(a) Confirmation run.
(b) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-DUP	2Q92327.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-2	2Q92326.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-2 [a]	2Q92348.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	Compound	FA95742-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0119	J	0.0103	J	14	30
2706-90-3	Perfluoropentanoic acid	0.0057	J	0.0074	J	26	30
307-24-4	Perfluorohexanoic acid	0.0201		0.0205		2	30
375-85-9	Perfluoroheptanoic acid	0.0050	J	0.0054	J	8	30
335-67-1	Perfluorooctanoic acid	0.0063	J	0.0066	J	5	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0067	J	0.0071	J	6	30
2706-91-4	Perfluoropentanesulfonic acid	0.0096		0.0088		9	30
355-46-4	Perfluorohexanesulfonic acid	0.106		0.110		4	30
375-92-8	Perfluoroheptanesulfonic acid	0.0058	J	0.0065	J	11	30
1763-23-1	Perfluorooctanesulfonic acid	0.242		0.263		8	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0080	U	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA95742-2	FA95742-2	Limits
	13C4-PFBA	76%	74%	87%	50-150%
	13C5-PFPeA	71%	69%	82%	50-150%
	13C5-PFHxA	72%	70%	80%	50-150%
	13C4-PFHpA	79%	78%	85%	50-150%
	13C8-PFOA	83%	81%	87%	50-150%
	13C9-PFNA	81%	79%	85%	50-150%
	13C6-PFDA	81%	81%	88%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91428-DUP	2Q92327.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-2	2Q92326.D	1	06/02/22	JB	05/31/22	OP91428	S2Q1293
FA95742-2 [a]	2Q92348.D	5	06/03/22	JB	05/31/22	OP91428	S2Q1294

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95742-1, FA95742-2, FA95742-3, FA95742-4, FA95742-5, FA95742-6

CAS No.	ID Standard Recoveries	DUP	FA95742-2	FA95742-2	Limits
	13C7-PFUnDA	78%	77%	84%	50-150%
	13C2-PFDoDA	71%	73%	80%	50-150%
	13C2-PFTeDA	38%* [b]	42%* [b]	44%* [b]	50-150%
	13C3-PFBS	77%	74%	90%	50-150%
	13C3-PFHxS	80%	78%	91%	50-150%
	13C8-PFOS	77%	81%	95%	50-150%
	13C8-FOSA	63%	74%	84%	50-150%
	d3-MeFOSAA	79%	77%	80%	50-150%
	d5-EtFOSAA	81%	81%	91%	50-150%
	13C2-4:2FTS	78%	73%	88%	50-150%
	13C2-6:2FTS	80%	82%	87%	50-150%
	13C2-8:2FTS	80%	82%	87%	50-150%
	13C3-HFPO-DA	72%	70%	90%	50-150%

(a) Confirmation run.
(b) Outside control limits.

* = Outside of Control Limits.

Isotope Dilution Standard Recovery Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Method: EPA 537M QSM5.3 B-15 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FA95742-1	2Q92346.D	84	80	78	84	85	82	85	81
FA95742-1	2Q92324.D	74	69	72	79	83	82	83	80
FA95742-2	2Q92348.D	87	82	80	85	87	85	88	84
FA95742-2	2Q92326.D	74	69	70	78	81	79	81	77
FA95742-3	2Q92725.D	52	48* [a]	48* [a]	54	55	56	57	54
FA95742-3	2Q92328.D	70	64	67	75	81	81	83	79
FA95742-4	2Q92351.D	86	82	82	88	88	85	89	84
FA95742-4	2Q92726.D	45* [a]	40* [a]	40* [a]	45* [a]	46* [a]	47* [a]	49* [a]	47* [a]
FA95742-4	2Q92329.D	72	66	69	79	84	82	82	76
FA95742-5	2Q92332.D	79	78	77	80	80	79	81	80
FA95742-6	2Q92333.D	89	86	86	87	89	86	90	87
OP91428-BS	2Q92308.D	83	82	82	84	85	85	85	85
OP91428-DUP	2Q92327.D	76	71	72	79	83	81	81	78
OP91428-MB	2Q92309.D	58	57	59	62	65	65	68	70
OP91428-MS	2Q92347.D	88	82	82	88	88	85	86	87
S2Q1293-IBLK	2Q92305.D	61	59	58	62	61	62	63	63
S2Q1294-IBLK	2Q92340.D	76	73	73	76	75	74	76	77

Isotope Dilution Standards	Recovery Limits
S1 = 13C4-PFBA	50-150%
S2 = 13C5-PFPeA	50-150%
S3 = 13C5-PFHxA	50-150%
S4 = 13C4-PFHpA	50-150%
S5 = 13C8-PFOA	50-150%
S6 = 13C9-PFNA	50-150%
S7 = 13C6-PFDA	50-150%
S8 = 13C7-PFUnDA	50-150%

(a) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Method: EPA 537M QSM5.3 B-15 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FA95742-1	2Q92346.D	74	36*	83	86	83	71	80	90
FA95742-1	2Q92324.D	73	36* [a]	74	79	79	66	77	82
FA95742-2	2Q92348.D	80	44* [a]	90	91	95	84	80	91
FA95742-2	2Q92326.D	73	42* [a]	74	78	81	74	77	81
FA95742-3	2Q92725.D	49* [a]	26* [a]	53	59	55	48* [a]	46* [a]	51
FA95742-3	2Q92328.D	74	43* [a]	72	77	83	66	72	77
FA95742-4	2Q92351.D	73	31*	89	88	92	56	83	84
FA95742-4	2Q92726.D	44* [a]	27* [a]	45* [a]	50	48* [a]	44* [a]	40* [a]	45* [a]
FA95742-4	2Q92329.D	66	27* [a]	73	79	79	45* [a]	72	74
FA95742-5	2Q92332.D	80	78	79	80	81	83	78	83
FA95742-6	2Q92333.D	87	85	89	91	87	88	86	92
OP91428-BS	2Q92308.D	83	79	84	87	84	79	78	78
OP91428-DUP	2Q92327.D	71	38* [a]	77	80	77	63	79	81
OP91428-MB	2Q92309.D	69	68	74	77	76	46* [a]	63	63
OP91428-MS	2Q92347.D	81	40* [a]	89	94	90	63	83	88
S2Q1293-IBLK	2Q92305.D	63	60	62	62	63	62	60	62
S2Q1294-IBLK	2Q92340.D	76	72	76	77	80	75	76	78

Isotope Dilution Standards	Recovery Limits
S9 = 13C2-PFDoDA	50-150%
S10 = 13C2-PFTeDA	50-150%
S11 = 13C3-PFBS	50-150%
S12 = 13C3-PFHxS	50-150%
S13 = 13C8-PFOS	50-150%
S14 = 13C8-FOSA	50-150%
S15 = d3-MeFOSAA	50-150%
S16 = d5-EtFOSAA	50-150%

(a) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Method: EPA 537M QSM5.3 B-15 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20
FA95742-1	2Q92346.D	86	84	83	78
FA95742-1	2Q92324.D	75	78	83	72
FA95742-2	2Q92348.D	88	87	87	90
FA95742-2	2Q92326.D	73	82	82	70
FA95742-3	2Q92725.D	52	54	57	55
FA95742-3	2Q92328.D	72	84	84	65
FA95742-4	2Q92351.D	93	90	88	89
FA95742-4	2Q92726.D	46* [a]	48* [a]	50	44* [a]
FA95742-4	2Q92329.D	73	84	79	72
FA95742-5	2Q92332.D	78	76	77	80
FA95742-6	2Q92333.D	88	87	85	85
OP91428-BS	2Q92308.D	86	84	82	86
OP91428-DUP	2Q92327.D	78	80	80	72
OP91428-MB	2Q92309.D	74	77	73	58
OP91428-MS	2Q92347.D	90	97	87	96
S2Q1293-IBLK	2Q92305.D	62	62	59	
S2Q1294-IBLK	2Q92340.D	76	73	72	80

Isotope Dilution Standards	Recovery Limits
S17 = 13C2-4:2FTS	50-150%
S18 = 13C2-6:2FTS	50-150%
S19 = 13C2-8:2FTS	50-150%
S20 = 13C3-HFPO-DA	50-150%

(a) Outside control limits.

Initial Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICC1287
Lab FileID: 2Q91961.D

Initial Calibration Report

Method Path	D:\MassHunter\damethods
Method File	ID_050922_S2Q1287.quantmethod.xml
Batch Name	D:\MassHunter\Data\ID_052722_S2Q1287\QuantResults\s2q1287.batch.bin
Last Calib Update	5/28/2022 10:45:41 AM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\ID_052722_S2Q1287\2q91956.d	5/27/2022 11:54:52 AM	5/28/2022 10:45:41 AM
2	D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d	5/27/2022 12:18:04 PM	5/28/2022 10:45:41 AM
3	D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d	5/27/2022 12:42:14 PM	5/28/2022 10:45:41 AM
4	D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d	5/27/2022 1:00:59 PM	5/28/2022 10:45:41 AM
5	D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d	5/27/2022 1:19:45 PM	5/28/2022 10:45:41 AM
6	D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d	5/27/2022 1:38:30 PM	5/28/2022 10:45:41 AM
7	D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d	5/27/2022 1:57:16 PM	5/28/2022 10:45:41 AM
8	D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d	5/27/2022 2:16:02 PM	5/28/2022 10:45:41 AM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
S 13C4-PFBA	Linear	3882	3770	3979	4007	3951	3463	3967	3891	3864	4.616
S 13C5-PFPeA	Linear	4568	4479	4716	4732	4642	4076	4678	4573	4558	4.655
S 13C3-PFBS	Linear	501.4	499.0	526.6	531.1	524.9	452.1	522.1	511.5	508.6	5.055
S 13C2-4:2FTS	Linear	463.6	455.2	483.1	487.6	476.3	418.7	473.9	463.3	465.2	4.663
S 13C5-PFHxA	Linear	6778	6659	6989	7032	6877	6022	6913	6748	6752	4.746
S 13C3-HFPO-DA	Linear	264.4	255.7	268.8	264.8	268.4	238.3	264.7	258.3	260.4	3.855
S 13C4-PFHpA	Linear	9447	9071	9580	9642	9549	8342	9422	9225	9285	4.586
S 13C3-PFHxS	Linear	712.8	727.6	752.2	746.1	724.0	626.1	707.9	706.8	712.9	5.455
S 13C2-6:2FTS	Linear	1064	1039	1091	1082	1072	907.2	1028	992.1	1034	5.864
S 13C8-PFOA	Linear	12927	12758	13378	13598	13339	11598	12964	12430	12874	4.950
S 13C8-FOSA	Linear	3852	3761	3948	3978	3856	3290	3610	3148	3680	8.396
S 13C8-PFOS	Linear	1083	1017	1067	1094	1078	925.6	1045	992.6	1038	5.498
S 13C9-PFNA	Linear	14822	14345	15238	15368	14984	13045	14740	14142	14585	5.121
S d3-MeFOSA	Linear	1485	1398	1503	1496	1442	1251	1365	1257	1400	7.261
S d3-MeFOSAA	Linear	3816	3865	4021	4001	3921	3405	3959	3690	3835	5.329
S d5-EtFOSAA	Linear	3154	3075	3266	3195	3184	2732	2974	2702	3035	7.079
S 13C6-PFDA	Linear	18593	18301	19408	19226	18464	16292	18165	17267	18214	5.591
S 13C2-8:2FTS	Linear	1461	1474	1530	1547	1521	1338	1496	1478	1481	4.375
S 13C7-PFUnDA	Linear	23245	22547	23581	23770	22983	20243	22831	21826	22628	5.038
S 13C2-PFDoDA	Linear	27789	26505	28363	27938	27676	24287	28411	25127	27012	5.755
S 13C2-PFTeDA	Linear	24673	24785	26205	25731	25566	22273	25695	24207	24892	5.016
I M5-EtFOSAA				---------- ISTD ----------							
T EtFOSAA	Linear	1.1484	1.0004	1.0174	0.9689	0.9334	0.9834	0.9663	1.0052	1.0029	6.429
I M4-PFBA				---------- ISTD ----------							
T PFBA	Linear	0.5625	0.5287	0.5179	0.5054	0.4988	0.5136	0.4992	0.5164	0.5178	3.998
I M5-PFPeA				---------- ISTD ----------							
T PFPeA	Linear	1.7183	1.5632	1.5563	1.5177	1.5086	1.5649	1.5047	1.5485	1.5603	4.382

Generated at 10:46 AM on 5/28/2022

Initial Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICC1287
Lab FileID: 2Q91961.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-PFHxA						ISTD					
T PFHxA	Linear	0.8160	0.7578	0.7364	0.7098	0.7201	0.7528	0.7217	0.7443	0.7449	4.467
I M4-PFHpA						ISTD					
T PFHpA	Linear	1.8115	1.6127	1.6336	1.5924	1.5884	1.6228	1.6085	1.6429	1.6391	4.399
I M8-PFOA						ISTD					
T ADONA	Linear	1.5819	1.4345	1.4572	1.4010	1.4095	1.4485	1.4469	1.5207	1.4625	4.126
T PFOA	Linear	1.2105	1.0929	1.0759	1.0626	1.0573	1.0870	1.0678	1.0912	1.0931	4.505
I M9-PFNA						ISTD					
T PFNA	Linear	1.1606	1.0758	1.1064	1.0567	1.0710	1.1149	1.0796	1.1206	1.0982	3.089
I M6-PFDA						ISTD					
T 9Cl-PF3ONS	Linear	0.1359	0.1044	0.1043	0.1037	0.1016	0.1050	0.1040	0.1097	0.1086	10.373
T PFDA	Linear	1.1224	0.9941	0.9820	0.9885	1.0024	1.0109	1.0007	1.0170	1.0148	4.432
I M7-PFUnDA						ISTD					
T PFDS	Linear	0.0387	0.0377	0.0375	0.0356	0.0362	0.0371	0.0359	0.0366	0.0369	2.866
T PFUnDA	Linear	0.9675	0.8887	0.9012	0.8833	0.8880	0.9077	0.8831	0.9248	0.9055	3.187
I M2-PFDoDA						ISTD					
T 11Cl-PF3OUdS	Linear	0.3192	0.3119	0.3064	0.3047	0.3004	0.3139	0.2980	0.3291	0.3105	3.322
T PFDoDA	Linear	1.0159	0.9252	0.9421	0.9302	0.9403	0.9551	0.9306	0.9670	0.9508	3.128
T PFTrDA	Linear	1.1871	1.0868	1.1107	1.0707	1.1044	1.0867	1.0765	1.1370	1.1075	3.480
I M2-PFTeDA						ISTD					
T PFTeDA	Linear	1.3318	1.2031	1.2047	1.1932	1.1847	1.2107	1.2009	1.2224	1.2189	3.852
I M8-FOSA						ISTD					
T FOSA	Linear	1.1248	1.0243	1.0388	1.0098	1.0266	1.0648	0.9944	1.0641	1.0434	3.919
I M3-PFBS						ISTD					
T PFBS	Linear	3.7647	3.4617	3.3868	3.3086	3.2496	3.3666	3.2679	3.3506	3.3946	4.837
T PFPeS	Linear	2.5559	2.3726	2.3770	2.2381	2.2465	2.3373	2.2282	2.2918	2.3309	4.652
I M3-PFHxS						ISTD					
T PFHxS	Linear	2.3617	2.7196	2.5893	2.4753	2.4533	2.5959	2.5029	2.5088	2.5259	4.287
T PFHpS	Linear	2.4631	2.2512	2.3067	2.3758	2.3766	2.4849	2.3632	2.3417	2.3704	3.226
I M8-PFOS						ISTD					
T PFOS	Linear	1.0816	1.7845	1.7477	1.6662	1.6337	1.7281	1.6803	1.7707	1.6366	14.074
T PFNS	Linear	1.5195	1.4136	1.4490	1.3879	1.3114	1.3719	1.3462	1.4267	1.4033	4.600
I M2-4:2FTS						ISTD					
T 4:2FTS	Avg RF	11.44	10.61	10.46	10.09	10.18	10.45	10.12	10.47	10.48	4.117
I M2-6:2FTS						ISTD					

Generated at 10:46 AM on 5/28/2022

Initial Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICC1287
Lab FileID: 2Q91961.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T 6:2FTS	Avg RF	7.8366	7.4249	7.3366	7.3462	7.0783	7.5922	7.2127	7.1638	7.3739	3.338
I M2-8:2FTS				----------	----------	ISTD	----------	----------			
T 8:2FTS	Avg RF	5.0612	4.8049	4.8256	4.6341	4.7468	4.7672	4.6196	4.6510	4.7638	3.017
I M3-MeFOSAA				----------	----------	ISTD	----------	----------			
T MeFOSAA	Linear	0.9865	0.8933	0.9218	0.8878	0.9046	0.9538	0.8842	0.9262	0.9198	3.872
I M3-HFPO-DA				----------	----------	ISTD	----------	----------			
T HFPO-DA	Linear	9.0971	7.2489	7.0921	7.2615	7.0737	7.0870	7.1357	7.2357	7.4040	9.299
I M3-MeFOSA				----------	----------	ISTD	----------	----------			
T MeFOSA	Linear	0.7455	0.9889	0.8124	0.8308	0.8513	0.8673	0.8361	0.8444	0.8471	8.037

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Generated at 10:46 AM on 5/28/2022

Initial Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICC1287
Lab FileID: 2Q91961.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	Curve Fit R2
S 13C4-PFBA	Linear	y = 3863.639411 * x	0.000000
T PFBA	Linear	y = 0.512849 * x	0.999729
S 13C5-PFPeA	Linear	y = 4557.999086 * x	0.000000
T PFPeA	Linear	y = 1.540214 * x	0.999795
S 13C3-PFBS	Linear	y = 508.573284 * x	0.000000
T PFBS	Linear	y = 3.334352 * x	0.999844
S 13C2-4:2FTS	Linear	y = 465.203725 * x	0.000000
S 13C5-PFHxA	Linear	y = 6752.301304 * x	0.000000
T PFHxA	Linear	y = 0.740007 * x	0.999755
T PFPeS	Linear	y = 2.280613 * x	0.999785
T HFPO-DA	Linear	y = 7.210770 * x	0.999935
S 13C3-HFPO-DA	Linear	y = 260.416699 * x	0.000000
S 13C4-PFHpA	Linear	y = 9284.745242 * x	0.000000
T PFHpA	Linear	y = 1.635149 * x	0.999883
S 13C3-PFHxS	Linear	y = 712.925479 * x	0.000000
T PFHxS	Linear	y = 2.509917 * x	0.999935
T ADONA	Linear	y = 1.503237 * x	0.999322
S 13C2-6:2FTS	Linear	y = 1034.223688 * x	0.000000
T PFHpS	Linear	y = 2.350521 * x	0.999819
S 13C8-PFOA	Linear	y = 12874.056113 * x	0.000000
T PFOA	Linear	y = 1.086256 * x	0.999882
T FOSA	Linear	y = 1.050306 * x	0.998965
S 13C8-FOSA	Linear	y = 3680.346710 * x	0.000000
S 13C8-PFOS	Linear	y = 1037.728659 * x	0.000000
T PFOS	Linear	y = 1.750754 * x	0.999315
S 13C9-PFNA	Linear	y = 14585.322132 * x	0.000000
T PFNA	Linear	y = 1.112082 * x	0.999662
T 9Cl-PF3ONS	Linear	y = 0.108370 * x	0.999265
S d3-MeFOSA	Linear	y = 1399.612510 * x	0.000000
T MeFOSA	Linear	y = 0.843540 * x	0.999933
S d3-MeFOSAA	Linear	y = 3834.910459 * x	0.000000
T MeFOSAA	Linear	y = 0.918774 * x	0.999440
T PFNS	Linear	y = 1.408602 * x	0.999159
S d5-EtFOSAA	Linear	y = 3035.316830 * x	0.000000
T EtFOSAA	Linear	y = 0.996442 * x	0.999590
S 13C6-PFDA	Linear	y = 18214.347121 * x	0.000000
T PFDA	Linear	y = 1.013534 * x	0.999935
S 13C2-8:2FTS	Linear	y = 1480.801371 * x	0.000000
T PFDS	Linear	y = 0.036480 * x	0.999880
S 13C7-PFUnDA	Linear	y = 22628.353528 * x	0.000000
T PFUnDA	Linear	y = 0.915929 * x	0.999501
T 11Cl-PF3OUdS	Linear	y = 0.322409 * x	0.997773
S 13C2-PFDoDA	Linear	y = 27012.073291 * x	0.000000

Generated at 10:46 AM on 5/28/2022

Initial Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICC1287
Lab FileID: 2Q91961.D

Initial Calibration Report

T PFDoDA	Linear	y = 0.959332 * x	0.999660
T PFTrDA	Linear	y = 1.123474 * x	0.999272
S 13C2-PFTeDA	Linear	y = 24891.738286 * x	0.000000
T PFTeDA	Linear	y = 1.217556 * x	0.999916

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICV1287
Lab FileID: 2Q91965.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_052722_S2Q1287\s2q1287.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\ID_052722_S2Q1287\2q91956.d
2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q91965
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.513	-2.4	97.6
13C2-6:2FTS	20.000	19.366	-3.2	96.8
13C2-8:2FTS	20.000	19.440	-2.8	97.2
13C2-PFDoDA	20.000	19.513	-2.4	97.6
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	19.754	-1.2	98.8
13C3-PFBS	20.000	19.480	-2.6	97.4
13C3-PFHxS	20.000	20.373	1.9	101.9
13C4-PFBA	20.000	19.331	-3.3	96.7
13C4-PFHpA	20.000	19.245	-3.8	96.2
d5-EtFOSAA	20.000	19.955	-0.2	99.8
13C5-PFHxA	20.000	19.293	-3.5	96.5
13C5-PFPeA	20.000	19.395	-3.0	97.0
13C6-PFDA	20.000	19.597	-2.0	98.0
13C7-PFUnDA	20.000	19.160	-4.2	95.8
13C8-FOSA	20.000	19.481	-2.6	97.4
13C8-PFOA	20.000	19.424	-2.9	97.1
13C8-PFOS	20.000	19.907	-0.5	99.5
13C9-PFNA	20.000	19.528	-2.4	97.6
4:2FTS	20.000	18.288	-8.6	91.4
6:2FTS	20.000	18.430	-7.8	92.2
8:2FTS	20.000	19.986	-0.1	99.9
d3-MeFOSAA	20.000	19.504	-2.5	97.5
EtFOSAA	20.000	19.249	-3.8	96.2
FOSA	20.000	20.285	1.4	101.4
MeFOSAA	20.000	20.000	0.0	100.0
PFBA	20.000	20.214	1.1	101.1
PFBS	20.000	16.638	-16.8	83.2
PFDA	20.000	19.689	-1.6	98.4
PFDoDA	20.000	21.394	7.0	107.0
PFDS	20.000	19.568	-2.2	97.8
PFHpA	20.000	19.653	-1.7	98.3
PFHpS	20.000	18.656	-6.7	93.3
PFHxA	20.000	19.087	-4.6	95.4
PFHxS	20.000	16.902	-15.5	84.5
PFNA	20.000	18.150	-9.2	90.8
PFNS	20.000	18.319	-8.4	91.6

Initial Calibration Verification

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1287-ICV1287
Lab FileID: 2Q91965.D

PFOA	20.000	21.287	6.4	106.4
PFOS	20.000	19.287	-3.6	96.4
PFPeA	20.000	19.773	-1.1	98.9
PFPeS	20.000	18.637	-6.8	93.2
PFTeDA	20.000	18.968	-5.2	94.8
PFTrDA	20.000	21.560	7.8	107.8
PFUnDA	20.000	20.911	4.6	104.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.358	-8.2	91.8
13C3-HFPO-DA	20.000	19.238	-3.8	96.2
9Cl-PF3ONS	20.000	18.365	-8.2	91.8
ADONA	20.000	18.378	-8.1	91.9
HFPO-DA	20.000	19.864	-0.7	99.3
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	0.000	0.000	0.0	165.3
d3-MeFOSA	20.000	20.539	2.7	102.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92306.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060222_S2Q1293\s2q1293.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92306
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	17.631	-11.8	88.2
13C2-6:2FTS	20.000	17.002	-15.0	85.0
13C2-8:2FTS	20.000	17.032	-14.8	85.2
13C2-PFDoDA	20.000	17.602	-12.0	88.0
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.405	-13.0	87.0
13C3-PFBS	20.000	17.580	-12.1	87.9
13C3-PFHxS	20.000	18.385	-8.1	91.9
13C4-PFBA	20.000	16.885	-15.6	84.4
13C4-PFHpA	20.000	17.223	-13.9	86.1
d5-EtFOSAA	20.000	17.532	-12.3	87.7
13C5-PFHxA	20.000	16.880	-15.6	84.4
13C5-PFPeA	20.000	16.770	-16.2	83.8
13C6-PFDA	20.000	17.507	-12.5	87.5
13C7-PFUnDA	20.000	17.449	-12.8	87.2
13C8-FOSA	20.000	17.410	-13.0	87.0
13C8-PFOA	20.000	17.267	-13.7	86.3
13C8-PFOS	20.000	17.528	-12.4	87.6
13C9-PFNA	20.000	17.077	-14.6	85.4
4:2FTS	20.000	16.741	-16.3	83.7
6:2FTS	20.000	17.353	-13.2	86.8
8:2FTS	20.000	17.567	-12.2	87.8
d3-MeFOSAA	20.000	16.782	-16.1	83.9
EtFOSAA	20.000	16.950	-15.2	84.8
FOSA	20.000	17.285	-13.6	86.4
MeFOSAA	20.000	17.687	-11.6	88.4
PFBA	20.000	17.236	-13.8	86.2
PFBS	20.000	17.338	-13.3	86.7
PFDA	20.000	17.189	-14.1	85.9
PFDoDA	20.000	17.192	-14.0	86.0
PFDS	20.000	17.824	-10.9	89.1
PFHpA	20.000	17.395	-13.0	87.0
PFHpS	20.000	17.042	-14.8	85.2
PFHxA	20.000	17.215	-13.9	86.1
PFHxS	20.000	16.977	-15.1	84.9
PFNA	20.000	17.673	-11.6	88.4
PFNS	20.000	17.065	-14.7	85.3

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92306.D

PFOA	20.000	17.232	-13.8	86.2
PFOS	20.000	17.398	-13.0	87.0
PFPeA	20.000	17.943	-10.3	89.7
PFPeS	20.000	17.998	-10.0	90.0
PFTeDA	20.000	17.791	-11.0	89.0
PFTrDA	20.000	17.133	-14.3	85.7
PFUnDA	20.000	17.011	-14.9	85.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.575	-12.1	87.9
13C3-HFPO-DA	20.000	17.069	-14.7	85.3
9Cl-PF3ONS	20.000	16.464	-17.7	82.3
ADONA	20.000	16.674	-16.6	83.4
HFPO-DA	20.000	17.792	-11.0	89.0
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.455	-7.7	92.3
d3-MeFOSA	20.000	15.466	-22.7	77.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92307.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060222_S2Q1293\s2q1293.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92307
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.464	-7.7	92.3
13C2-6:2FTS	20.000	18.274	-8.6	91.4
13C2-8:2FTS	20.000	18.237	-8.8	91.2
13C2-PFDoDA	20.000	17.844	-10.8	89.2
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.938	-10.3	89.7
13C3-PFBS	20.000	18.126	-9.4	90.6
13C3-PFHxS	20.000	18.738	-6.3	93.7
13C4-PFBA	20.000	17.963	-10.2	89.8
13C4-PFHpA	20.000	18.356	-8.2	91.8
d5-EtFOSAA	20.000	18.633	-6.8	93.2
13C5-PFHxA	20.000	17.757	-11.2	88.8
13C5-PFPeA	20.000	17.589	-12.1	87.9
13C6-PFDA	20.000	18.675	-6.6	93.4
13C7-PFUnDA	20.000	18.535	-7.3	92.7
13C8-FOSA	20.000	19.167	-4.2	95.8
13C8-PFOA	20.000	18.383	-8.1	91.9
13C8-PFOS	20.000	17.731	-11.3	88.7
13C9-PFNA	20.000	17.911	-10.4	89.6
4:2FTS	1.000	0.998	-0.2	99.8
6:2FTS	1.000	0.981	-1.9	98.1
8:2FTS	1.000	1.032	3.2	103.2
d3-MeFOSAA	20.000	17.355	-13.2	86.8
EtFOSAA	1.000	1.055	5.5	105.5
FOSA	1.000	1.029	2.9	102.9
MeFOSAA	1.000	1.090	9.0	109.0
PFBA	1.000	1.035	3.5	103.5
PFBS	1.000	1.047	4.7	104.7
PFDA	1.000	0.963	-3.7	96.3
PFDoDA	1.000	0.985	-1.5	98.5
PFDS	1.000	1.061	6.1	106.1
PFHpA	1.000	1.000	0.0	100.0
PFHpS	1.000	1.029	2.9	102.9
PFHxA	1.000	1.008	0.8	100.8
PFHxS	1.000	1.018	1.8	101.8
PFNA	1.000	1.004	0.4	100.4
PFNS	1.000	1.108	10.8	110.8

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92307.D

PFOA	1.000	1.018	1.8	101.8
PFOS	1.000	1.102	10.2	110.2
PFPeA	1.000	1.061	6.1	106.1
PFPeS	1.000	1.098	9.8	109.8
PFTeDA	1.000	1.022	2.2	102.2
PFTrDA	1.000	0.985	-1.5	98.5
PFUnDA	1.000	0.966	-3.4	96.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	1.007	0.7	100.7
13C3-HFPO-DA	20.000	18.628	-6.9	93.1
9Cl-PF3ONS	1.000	1.028	2.8	102.8
ADONA	1.000	0.982	-1.8	98.2
HFPO-DA	1.000	1.034	3.4	103.4
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	1.000	1.035	3.5	103.5
d3-MeFOSA	20.000	17.203	-14.0	86.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92318.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060222_S2Q1293\s2q1293.batch.bin

Level ID:Calibration File
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4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92318
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.014	-9.9	90.1
13C2-6:2FTS	20.000	17.538	-12.3	87.7
13C2-8:2FTS	20.000	17.692	-11.5	88.5
13C2-PFDoDA	20.000	17.888	-10.6	89.4
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.528	-12.4	87.6
13C3-PFBS	20.000	17.608	-12.0	88.0
13C3-PFHxS	20.000	18.609	-7.0	93.0
13C4-PFBA	20.000	17.412	-12.9	87.1
13C4-PFHpA	20.000	17.677	-11.6	88.4
d5-EtFOSAA	20.000	18.159	-9.2	90.8
13C5-PFHxA	20.000	17.484	-12.6	87.4
13C5-PFPeA	20.000	17.208	-14.0	86.0
13C6-PFDA	20.000	17.590	-12.1	87.9
13C7-PFUnDA	20.000	17.891	-10.5	89.5
13C8-FOSA	20.000	18.363	-8.2	91.8
13C8-PFOA	20.000	17.790	-11.1	88.9
13C8-PFOS	20.000	17.957	-10.2	89.8
13C9-PFNA	20.000	17.761	-11.2	88.8
4:2FTS	20.000	16.724	-16.4	83.6
6:2FTS	20.000	17.481	-12.6	87.4
8:2FTS	20.000	17.231	-13.8	86.2
d3-MeFOSAA	20.000	17.340	-13.3	86.7
EtFOSAA	20.000	16.656	-16.7	83.3
FOSA	20.000	17.050	-14.7	85.3
MeFOSAA	20.000	17.882	-10.6	89.4
PFBA	20.000	16.958	-15.2	84.8
PFBS	20.000	17.416	-12.9	87.1
PFDA	20.000	17.352	-13.2	86.8
PFDoDA	20.000	16.953	-15.2	84.8
PFDS	20.000	17.834	-10.8	89.2
PFHpA	20.000	17.369	-13.2	86.8
PFHpS	20.000	17.218	-13.9	86.1
PFHxA	20.000	17.261	-13.7	86.3
PFHxS	20.000	17.310	-13.5	86.5
PFNA	20.000	17.213	-13.9	86.1
PFNS	20.000	17.635	-11.8	88.2

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92318.D

PFOA	20.000	17.225	-13.9	86.1
PFOS	20.000	17.554	-12.2	87.8
PFPeA	20.000	17.837	-10.8	89.2
PFPeS	20.000	17.992	-10.0	90.0
PFTeDA	20.000	17.774	-11.1	88.9
PFTrDA	20.000	16.837	-15.8	84.2
PFUnDA	20.000	17.060	-14.7	85.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.567	-12.2	87.8
13C3-HFPO-DA	20.000	17.001	-15.0	85.0
9Cl-PF3ONS	20.000	16.521	-17.4	82.6
ADONA	20.000	16.730	-16.4	83.6
HFPO-DA	20.000	17.774	-11.1	88.9
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.326	-8.4	91.6
d3-MeFOSA	20.000	16.413	-17.9	82.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92330.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060222_S2Q1293\s2q1293.batch.bin

Level ID:Calibration File
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5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92330
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	17.970	-10.1	89.9
13C2-6:2FTS	20.000	18.136	-9.3	90.7
13C2-8:2FTS	20.000	17.433	-12.8	87.2
13C2-PFDoDA	20.000	18.396	-8.0	92.0
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.748	-11.3	88.7
13C3-PFBS	20.000	17.898	-10.5	89.5
13C3-PFHxS	20.000	18.504	-7.5	92.5
13C4-PFBA	20.000	17.787	-11.1	88.9
13C4-PFHpA	20.000	17.941	-10.3	89.7
d5-EtFOSAA	20.000	18.253	-8.7	91.3
13C5-PFHxA	20.000	17.319	-13.4	86.6
13C5-PFPeA	20.000	17.364	-13.2	86.8
13C6-PFDA	20.000	18.403	-8.0	92.0
13C7-PFUnDA	20.000	18.519	-7.4	92.6
13C8-FOSA	20.000	18.599	-7.0	93.0
13C8-PFOA	20.000	17.886	-10.6	89.4
13C8-PFOS	20.000	18.050	-9.8	90.2
13C9-PFNA	20.000	17.917	-10.4	89.6
4:2FTS	20.000	16.590	-17.1	82.9
6:2FTS	20.000	17.068	-14.7	85.3
8:2FTS	20.000	18.110	-9.4	90.6
d3-MeFOSAA	20.000	17.908	-10.5	89.5
EtFOSAA	20.000	17.207	-14.0	86.0
FOSA	20.000	17.317	-13.4	86.6
MeFOSAA	20.000	17.431	-12.8	87.2
PFBA	20.000	16.930	-15.4	84.6
PFBS	20.000	17.414	-12.9	87.1
PFDA	20.000	17.009	-15.0	85.0
PFDoDA	20.000	16.911	-15.4	84.6
PFDS	20.000	17.094	-14.5	85.5
PFHpA	20.000	17.491	-12.5	87.5
PFHpS	20.000	17.621	-11.9	88.1
PFHxA	20.000	17.146	-14.3	85.7
PFHxS	20.000	17.070	-14.6	85.4
PFNA	20.000	17.480	-12.6	87.4
PFNS	20.000	17.588	-12.1	87.9

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-CC1287
Lab FileID: 2Q92330.D

PFOA	20.000	17.464	-12.7	87.3
PFOS	20.000	16.912	-15.4	84.6
PFPeA	20.000	17.956	-10.2	89.8
PFPeS	20.000	17.848	-10.8	89.2
PFTeDA	20.000	17.880	-10.6	89.4
PFTrDA	20.000	16.871	-15.6	84.4
PFUnDA	20.000	16.843	-15.8	84.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.559	-12.2	87.8
13C3-HFPO-DA	20.000	17.270	-13.7	86.3
9Cl-PF3ONS	20.000	16.390	-18.0	82.0
ADONA	20.000	16.954	-15.2	84.8
HFPO-DA	20.000	17.345	-13.3	86.7
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.235	-8.8	91.2
d3-MeFOSA	20.000	17.252	-13.7	86.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-ECC1287
Lab FileID: 2Q92334.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060222_S2Q1293\s2q1293.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92334
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	17.699	-11.5	88.5
13C2-6:2FTS	20.000	17.737	-11.3	88.7
13C2-8:2FTS	20.000	17.339	-13.3	86.7
13C2-PFDoDA	20.000	18.355	-8.2	91.8
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.448	-12.8	87.2
13C3-PFBS	20.000	17.965	-10.2	89.8
13C3-PFHxS	20.000	17.977	-10.1	89.9
13C4-PFBA	20.000	17.736	-11.3	88.7
13C4-PFHpA	20.000	17.894	-10.5	89.5
d5-EtFOSAA	20.000	18.441	-7.8	92.2
13C5-PFHxA	20.000	17.377	-13.1	86.9
13C5-PFPeA	20.000	17.273	-13.6	86.4
13C6-PFDA	20.000	18.301	-8.5	91.5
13C7-PFUnDA	20.000	18.338	-8.3	91.7
13C8-FOSA	20.000	18.717	-6.4	93.6
13C8-PFOA	20.000	17.668	-11.7	88.3
13C8-PFOS	20.000	17.788	-11.1	88.9
13C9-PFNA	20.000	17.589	-12.1	87.9
4:2FTS	20.000	17.076	-14.6	85.4
6:2FTS	20.000	17.517	-12.4	87.6
8:2FTS	20.000	18.403	-8.0	92.0
d3-MeFOSAA	20.000	18.084	-9.6	90.4
EtFOSAA	20.000	17.626	-11.9	88.1
FOSA	20.000	17.094	-14.5	85.5
MeFOSAA	20.000	17.570	-12.2	87.8
PFBA	20.000	16.844	-15.8	84.2
PFBS	20.000	17.385	-13.1	86.9
PFDA	20.000	16.857	-15.7	84.3
PFDoDA	20.000	17.050	-14.8	85.2
PFDS	20.000	17.241	-13.8	86.2
PFHpA	20.000	17.545	-12.3	87.7
PFHpS	20.000	17.985	-10.1	89.9
PFHxA	20.000	17.121	-14.4	85.6
PFHxS	20.000	17.735	-11.3	88.7
PFNA	20.000	17.915	-10.4	89.6
PFNS	20.000	17.718	-11.4	88.6

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1293-ECC1287
Lab FileID: 2Q92334.D

PFOA	20.000	17.502	-12.5	87.5
PFOS	20.000	17.786	-11.1	88.9
PFPeA	20.000	18.095	-9.5	90.5
PFPeS	20.000	17.798	-11.0	89.0
PFTeDA	20.000	17.962	-10.2	89.8
PFTrDA	20.000	16.890	-15.5	84.5
PFUnDA	20.000	16.918	-15.4	84.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.528	-12.4	87.6
13C3-HFPO-DA	20.000	16.953	-15.2	84.8
9Cl-PF3ONS	20.000	16.335	-18.3	81.7
ADONA	20.000	17.291	-13.5	86.5
HFPO-DA	20.000	17.668	-11.7	88.3
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.608	-7.0	93.0
d3-MeFOSA	20.000	16.878	-15.6	84.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92341.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060322_S2Q1294\s2q1294.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92341
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.247	-8.8	91.2
13C2-6:2FTS	20.000	17.183	-14.1	85.9
13C2-8:2FTS	20.000	17.076	-14.6	85.4
13C2-PFDoDA	20.000	18.389	-8.1	91.9
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	17.833	-10.8	89.2
13C3-PFBS	20.000	18.574	-7.1	92.9
13C3-PFHxS	20.000	18.141	-9.3	90.7
13C4-PFBA	20.000	18.112	-9.4	90.6
13C4-PFHpA	20.000	18.141	-9.3	90.7
d5-EtFOSAA	20.000	18.673	-6.6	93.4
13C5-PFHxA	20.000	17.218	-13.9	86.1
13C5-PFPeA	20.000	17.618	-11.9	88.1
13C6-PFDA	20.000	18.037	-9.8	90.2
13C7-PFUnDA	20.000	18.296	-8.5	91.5
13C8-FOSA	20.000	17.478	-12.6	87.4
13C8-PFOA	20.000	17.710	-11.4	88.6
13C8-PFOS	20.000	18.200	-9.0	91.0
13C9-PFNA	20.000	17.373	-13.1	86.9
4:2FTS	20.000	16.802	-16.0	84.0
6:2FTS	20.000	18.032	-9.8	90.2
8:2FTS	20.000	18.571	-7.1	92.9
d3-MeFOSAA	20.000	17.839	-10.8	89.2
EtFOSAA	20.000	17.043	-14.8	85.2
FOSA	20.000	17.507	-12.5	87.5
MeFOSAA	20.000	17.741	-11.3	88.7
PFBA	20.000	17.101	-14.5	85.5
PFBS	20.000	17.248	-13.8	86.2
PFDA	20.000	17.002	-15.0	85.0
PFDoDA	20.000	17.040	-14.8	85.2
PFDS	20.000	17.854	-10.7	89.3
PFHpA	20.000	17.635	-11.8	88.2
PFHpS	20.000	18.451	-7.7	92.3
PFHxA	20.000	17.354	-13.2	86.8
PFHxS	20.000	16.934	-15.3	84.7
PFNA	20.000	18.231	-8.8	91.2
PFNS	20.000	17.491	-12.5	87.5

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92341.D

PFOA	20.000	17.349	-13.3	86.7
PFOS	20.000	17.557	-12.2	87.8
PFPeA	20.000	18.323	-8.4	91.6
PFPeS	20.000	17.612	-11.9	88.1
PFTeDA	20.000	17.943	-10.3	89.7
PFTrDA	20.000	16.985	-15.1	84.9
PFUnDA	20.000	16.938	-15.3	84.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.459	-12.7	87.3
13C3-HFPO-DA	20.000	18.709	-6.5	93.5
9Cl-PF3ONS	20.000	16.233	-18.8	81.2
ADONA	20.000	17.279	-13.6	86.4
HFPO-DA	20.000	18.057	-9.7	90.3
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	17.866	-10.7	89.3
d3-MeFOSA	20.000	15.539	-22.3	77.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92342.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060322_S2Q1294\s2q1294.batch.bin

Level ID:Calibration File
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4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92342
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.866	-5.7	94.3
13C2-6:2FTS	20.000	18.366	-8.2	91.8
13C2-8:2FTS	20.000	18.323	-8.4	91.6
13C2-PFDoDA	20.000	18.663	-6.7	93.3
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	18.340	-8.3	91.7
13C3-PFBS	20.000	18.856	-5.7	94.3
13C3-PFHxS	20.000	18.807	-6.0	94.0
13C4-PFBA	20.000	18.605	-7.0	93.0
13C4-PFHpA	20.000	18.454	-7.7	92.3
d5-EtFOSAA	20.000	19.691	-1.5	98.5
13C5-PFHxA	20.000	17.737	-11.3	88.7
13C5-PFPeA	20.000	17.937	-10.3	89.7
13C6-PFDA	20.000	19.031	-4.8	95.2
13C7-PFUnDA	20.000	19.368	-3.2	96.8
13C8-FOSA	20.000	18.909	-5.5	94.5
13C8-PFOA	20.000	18.272	-8.6	91.4
13C8-PFOS	20.000	18.510	-7.5	92.5
13C9-PFNA	20.000	17.890	-10.6	89.4
4:2FTS	1.000	0.935	-6.5	93.5
6:2FTS	1.000	1.015	1.5	101.5
8:2FTS	1.000	1.007	0.7	100.7
d3-MeFOSAA	20.000	18.657	-6.7	93.3
EtFOSAA	1.000	1.030	3.0	103.0
FOSA	1.000	0.958	-4.2	95.8
MeFOSAA	1.000	1.044	4.4	104.4
PFBA	1.000	0.995	-0.5	99.5
PFBS	1.000	0.987	-1.3	98.7
PFDA	1.000	0.965	-3.5	96.5
PFDoDA	1.000	1.001	0.1	100.1
PFDS	1.000	1.076	7.6	107.6
PFHpA	1.000	1.020	2.0	102.0
PFHpS	1.000	1.113	11.3	111.3
PFHxA	1.000	1.004	0.4	100.4
PFHxS	1.000	1.042	4.2	104.2
PFNA	1.000	1.067	6.7	106.7
PFNS	1.000	1.077	7.7	107.7

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92342.D

PFOA	1.000	1.018	1.8	101.8
PFOS	1.000	1.053	5.3	105.3
PFPeA	1.000	1.065	6.5	106.5
PFPeS	1.000	1.040	4.0	104.0
PFTeDA	1.000	1.037	3.7	103.7
PFTrDA	1.000	0.984	-1.6	98.4
PFUnDA	1.000	0.935	-6.5	93.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	0.996	-0.4	99.6
13C3-HFPO-DA	20.000	19.382	-3.1	96.9
9Cl-PF3ONS	1.000	0.961	-3.9	96.1
ADONA	1.000	0.971	-2.9	97.1
HFPO-DA	1.000	1.049	4.9	104.9
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	1.000	1.062	6.2	106.2
d3-MeFOSA	20.000	17.007	-15.0	85.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92352.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060322_S2Q1294\s2q1294.batch.bin

Level ID:Calibration File
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4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92352
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.810	-5.9	94.1
13C2-6:2FTS	20.000	18.376	-8.1	91.9
13C2-8:2FTS	20.000	18.279	-8.6	91.4
13C2-PFDoDA	20.000	19.503	-2.5	97.5
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	18.657	-6.7	93.3
13C3-PFBS	20.000	18.782	-6.1	93.9
13C3-PFHxS	20.000	19.352	-3.2	96.8
13C4-PFBA	20.000	18.906	-5.5	94.5
13C4-PFHpA	20.000	19.036	-4.8	95.2
d5-EtFOSAA	20.000	20.273	1.4	101.4
13C5-PFHxA	20.000	18.419	-7.9	92.1
13C5-PFPeA	20.000	18.441	-7.8	92.2
13C6-PFDA	20.000	19.228	-3.9	96.1
13C7-PFUnDA	20.000	19.585	-2.1	97.9
13C8-FOSA	20.000	19.157	-4.2	95.8
13C8-PFOA	20.000	18.841	-5.8	94.2
13C8-PFOS	20.000	19.131	-4.3	95.7
13C9-PFNA	20.000	19.041	-4.8	95.2
4:2FTS	20.000	17.180	-14.1	85.9
6:2FTS	20.000	18.044	-9.8	90.2
8:2FTS	20.000	18.341	-8.3	91.7
d3-MeFOSAA	20.000	19.947	-0.3	99.7
EtFOSAA	20.000	17.286	-13.6	86.4
FOSA	20.000	17.623	-11.9	88.1
MeFOSAA	20.000	17.559	-12.2	87.8
PFBA	20.000	16.874	-15.6	84.4
PFBS	20.000	17.409	-13.0	87.0
PFDA	20.000	17.236	-13.8	86.2
PFDoDA	20.000	17.008	-15.0	85.0
PFDS	20.000	17.306	-13.5	86.5
PFHpA	20.000	17.378	-13.1	86.9
PFHpS	20.000	17.834	-10.8	89.2
PFHxA	20.000	17.095	-14.5	85.5
PFHxS	20.000	17.450	-12.7	87.3
PFNA	20.000	17.476	-12.6	87.4
PFNS	20.000	17.231	-13.8	86.2

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92352.D

PFOA	20.000	17.567	-12.2	87.8
PFOS	20.000	17.105	-14.5	85.5
PFPeA	20.000	17.921	-10.4	89.6
PFPeS	20.000	17.779	-11.1	88.9
PFTeDA	20.000	17.958	-10.2	89.8
PFTrDA	20.000	16.980	-15.1	84.9
PFUnDA	20.000	16.753	-16.2	83.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.431	-12.8	87.2
13C3-HFPO-DA	20.000	19.027	-4.9	95.1
9Cl-PF3ONS	20.000	16.228	-18.9	81.1
ADONA	20.000	17.032	-14.8	85.2
HFPO-DA	20.000	18.521	-7.4	92.6
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.291	-8.5	91.5
d3-MeFOSA	20.000	17.373	-13.1	86.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92354.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060322_S2Q1294\s2q1294.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92354
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.207	-4.0	96.0
13C2-6:2FTS	20.000	19.022	-4.9	95.1
13C2-8:2FTS	20.000	19.602	-2.0	98.0
13C2-PFDoDA	20.000	19.366	-3.2	96.8
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	19.237	-3.8	96.2
13C3-PFBS	20.000	19.159	-4.2	95.8
13C3-PFHxS	20.000	20.513	2.6	102.6
13C4-PFBA	20.000	19.008	-5.0	95.0
13C4-PFHpA	20.000	19.176	-4.1	95.9
d5-EtFOSAA	20.000	21.324	6.6	106.6
13C5-PFHxA	20.000	18.892	-5.5	94.5
13C5-PFPeA	20.000	18.869	-5.7	94.3
13C6-PFDA	20.000	20.119	0.6	100.6
13C7-PFUnDA	20.000	20.334	1.7	101.7
13C8-FOSA	20.000	20.464	2.3	102.3
13C8-PFOA	20.000	19.249	-3.8	96.2
13C8-PFOS	20.000	19.858	-0.7	99.3
13C9-PFNA	20.000	19.060	-4.7	95.3
4:2FTS	1.000	0.985	-1.5	98.5
6:2FTS	1.000	1.011	1.1	101.1
8:2FTS	1.000	1.019	1.9	101.9
d3-MeFOSAA	20.000	19.793	-1.0	99.0
EtFOSAA	1.000	0.950	-5.0	95.0
FOSA	1.000	0.950	-5.0	95.0
MeFOSAA	1.000	1.030	3.0	103.0
PFBA	1.000	1.018	1.8	101.8
PFBS	1.000	1.032	3.2	103.2
PFDA	1.000	0.953	-4.7	95.3
PFDoDA	1.000	0.977	-2.3	97.7
PFDS	1.000	0.964	-3.6	96.4
PFHpA	1.000	1.015	1.5	101.5
PFHpS	1.000	0.997	-0.3	99.7
PFHxA	1.000	0.989	-1.1	98.9
PFHxS	1.000	0.984	-1.6	98.4
PFNA	1.000	1.040	4.0	104.0
PFNS	1.000	1.044	4.4	104.4

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1294-CC1287
Lab FileID: 2Q92354.D

PFOA	1.000	0.999	-0.1	99.9
PFOS	1.000	1.041	4.1	104.1
PFPeA	1.000	1.058	5.8	105.8
PFPeS	1.000	1.055	5.5	105.5
PFTeDA	1.000	1.021	2.1	102.1
PFTrDA	1.000	0.982	-1.8	98.2
PFUnDA	1.000	0.964	-3.6	96.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	1.018	1.8	101.8
13C3-HFPO-DA	20.000	19.606	-2.0	98.0
9Cl-PF3ONS	1.000	0.917	-8.3	91.7
ADONA	1.000	0.972	-2.8	97.2
HFPO-DA	1.000	1.013	1.3	101.3
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	1.000	0.995	-0.5	99.5
d3-MeFOSA	20.000	18.521	-7.4	92.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-CC1287
Lab FileID: 2Q92720.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060422_S2Q1295\s2q1298.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\ID_052722_S2Q1287\2q91957.d
3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92720
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.955	-0.2	99.8
13C2-6:2FTS	20.000	19.543	-2.3	97.7
13C2-8:2FTS	20.000	19.606	-2.0	98.0
13C2-PFDoDA	20.000	19.554	-2.2	97.8
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	18.658	-6.7	93.3
13C3-PFBS	20.000	20.042	0.2	100.2
13C3-PFHxS	20.000	20.305	1.5	101.5
13C4-PFBA	20.000	20.184	0.9	100.9
13C4-PFHpA	20.000	19.875	-0.6	99.4
d5-EtFOSAA	20.000	18.726	-6.4	93.6
13C5-PFHxA	20.000	19.028	-4.9	95.1
13C5-PFPeA	20.000	19.412	-2.9	97.1
13C6-PFDA	20.000	19.804	-1.0	99.0
13C7-PFUnDA	20.000	19.951	-0.2	99.8
13C8-FOSA	20.000	20.704	3.5	103.5
13C8-PFOA	20.000	19.092	-4.5	95.5
13C8-PFOS	20.000	20.512	2.6	102.6
13C9-PFNA	20.000	19.472	-2.6	97.4
4:2FTS	20.000	16.951	-15.2	84.8
6:2FTS	20.000	17.725	-11.4	88.6
8:2FTS	20.000	18.074	-9.6	90.4
d3-MeFOSAA	20.000	18.985	-5.1	94.9
EtFOSAA	20.000	16.976	-15.1	84.9
FOSA	20.000	17.071	-14.6	85.4
MeFOSAA	20.000	17.243	-13.8	86.2
PFBA	20.000	16.790	-16.0	84.0
PFBS	20.000	17.536	-12.3	87.7
PFDA	20.000	17.080	-14.6	85.4
PFDoDA	20.000	16.915	-15.4	84.6
PFDS	20.000	16.949	-15.3	84.7
PFHpA	20.000	17.471	-12.6	87.4
PFHpS	20.000	17.703	-11.5	88.5
PFHxA	20.000	17.165	-14.2	85.8
PFHxS	20.000	17.193	-14.0	86.0
PFNA	20.000	17.967	-10.2	89.8
PFNS	20.000	16.613	-16.9	83.1

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-CC1287
Lab FileID: 2Q92720.D

PFOA	20.000	17.670	-11.7	88.3
PFOS	20.000	17.280	-13.6	86.4
PFPeA	20.000	18.059	-9.7	90.3
PFPeS	20.000	17.487	-12.6	87.4
PFTeDA	20.000	17.918	-10.4	89.6
PFTrDA	20.000	16.610	-17.0	83.0
PFUnDA	20.000	16.908	-15.5	84.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.751	-11.2	88.8
13C3-HFPO-DA	20.000	20.909	4.5	104.5
9Cl-PF3ONS	20.000	16.401	-18.0	82.0
ADONA	20.000	17.588	-12.1	87.9
HFPO-DA	20.000	17.199	-14.0	86.0
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.061	-9.7	90.3
d3-MeFOSA	20.000	19.506	-2.5	97.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-CC1287
Lab FileID: 2Q92722.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060422_S2Q1295\s2q1298.batch.bin

Level ID:Calibration File
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3:D:\MassHunter\Data\ID_052722_S2Q1287\2q91958.d
4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92722
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.533	-2.3	97.7
13C2-6:2FTS	20.000	19.696	-1.5	98.5
13C2-8:2FTS	20.000	19.279	-3.6	96.4
13C2-PFDoDA	20.000	18.657	-6.7	93.3
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	18.492	-7.5	92.5
13C3-PFBS	20.000	19.633	-1.8	98.2
13C3-PFHxS	20.000	19.718	-1.4	98.6
13C4-PFBA	20.000	19.700	-1.5	98.5
13C4-PFHpA	20.000	19.424	-2.9	97.1
d5-EtFOSAA	20.000	18.686	-6.6	93.4
13C5-PFHxA	20.000	18.851	-5.7	94.3
13C5-PFPeA	20.000	18.908	-5.5	94.5
13C6-PFDA	20.000	19.206	-4.0	96.0
13C7-PFUnDA	20.000	19.343	-3.3	96.7
13C8-FOSA	20.000	20.699	3.5	103.5
13C8-PFOA	20.000	18.996	-5.0	95.0
13C8-PFOS	20.000	19.571	-2.1	97.9
13C9-PFNA	20.000	19.030	-4.8	95.2
4:2FTS	1.000	0.982	-1.8	98.2
6:2FTS	1.000	0.992	-0.8	99.2
8:2FTS	1.000	1.035	3.5	103.5
d3-MeFOSAA	20.000	18.119	-9.4	90.6
EtFOSAA	1.000	0.949	-5.1	94.9
FOSA	1.000	1.015	1.5	101.5
MeFOSAA	1.000	0.980	-2.0	98.0
PFBA	1.000	1.009	0.9	100.9
PFBS	1.000	1.045	4.5	104.5
PFDA	1.000	0.992	-0.8	99.2
PFDoDA	1.000	0.975	-2.5	97.5
PFDS	1.000	1.011	1.1	101.1
PFHpA	1.000	1.003	0.3	100.3
PFHpS	1.000	1.124	12.4	112.4
PFHxA	1.000	0.998	-0.2	99.8
PFHxS	1.000	1.056	5.6	105.6
PFNA	1.000	1.001	0.1	100.1
PFNS	1.000	1.014	1.4	101.4

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-CC1287
Lab FileID: 2Q92722.D

PFOA	1.000	1.026	2.6	102.6
PFOS	1.000	0.978	-2.2	97.8
PFPeA	1.000	1.050	5.0	105.0
PFPeS	1.000	0.993	-0.7	99.3
PFTeDA	1.000	1.020	2.0	102.0
PFTrDA	1.000	0.958	-4.2	95.8
PFUnDA	1.000	0.965	-3.5	96.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	0.993	-0.7	99.3
13C3-HFPO-DA	20.000	20.780	3.9	103.9
9Cl-PF3ONS	1.000	0.989	-1.1	98.9
ADONA	1.000	0.971	-2.9	97.1
HFPO-DA	1.000	0.968	-3.2	96.8
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	1.000	1.116	11.6	111.6
d3-MeFOSA	20.000	19.861	-0.7	99.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-ECC1287
Lab FileID: 2Q92731.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\ID_060422_S2Q1295\s2q1298.batch.bin

Level ID:Calibration File
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4:D:\MassHunter\Data\ID_052722_S2Q1287\2q91959.d
5:D:\MassHunter\Data\ID_052722_S2Q1287\2q91960.d
6:D:\MassHunter\Data\ID_052722_S2Q1287\2q91961.d
7:D:\MassHunter\Data\ID_052722_S2Q1287\2q91962.d
8:D:\MassHunter\Data\ID_052722_S2Q1287\2q91963.d

Data File: 2q92731
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.788	3.9	103.9
13C2-6:2FTS	20.000	20.550	2.7	102.7
13C2-8:2FTS	20.000	20.274	1.4	101.4
13C2-PFDoDA	20.000	20.121	0.6	100.6
M5-EtFOSAA	---	--ISTD--		
13C2-PFTeDA	20.000	19.499	-2.5	97.5
13C3-PFBS	20.000	21.044	5.2	105.2
13C3-PFHxS	20.000	21.044	5.2	105.2
13C4-PFBA	20.000	20.828	4.1	104.1
13C4-PFHpA	20.000	20.522	2.6	102.6
d5-EtFOSAA	20.000	18.998	-5.0	95.0
13C5-PFHxA	20.000	20.036	0.2	100.2
13C5-PFPeA	20.000	20.378	1.9	101.9
13C6-PFDA	20.000	20.618	3.1	103.1
13C7-PFUnDA	20.000	20.416	2.1	102.1
13C8-FOSA	20.000	20.829	4.1	104.1
13C8-PFOA	20.000	20.238	1.2	101.2
13C8-PFOS	20.000	20.527	2.6	102.6
13C9-PFNA	20.000	20.237	1.2	101.2
4:2FTS	20.000	16.846	-15.8	84.2
6:2FTS	20.000	17.593	-12.0	88.0
8:2FTS	20.000	17.765	-11.2	88.8
d3-MeFOSAA	20.000	19.234	-3.8	96.2
EtFOSAA	20.000	17.498	-12.5	87.5
FOSA	20.000	17.490	-12.6	87.4
MeFOSAA	20.000	17.607	-12.0	88.0
PFBA	20.000	16.847	-15.8	84.2
PFBS	20.000	17.192	-14.0	86.0
PFDA	20.000	16.926	-15.4	84.6
PFDoDA	20.000	17.150	-14.3	85.7
PFDS	20.000	17.535	-12.3	87.7
PFHpA	20.000	17.274	-13.6	86.4
PFHpS	20.000	17.736	-11.3	88.7
PFHxA	20.000	17.231	-13.8	86.2
PFHxS	20.000	17.104	-14.5	85.5
PFNA	20.000	17.516	-12.4	87.6
PFNS	20.000	17.276	-13.6	86.4

Continuing Calibration Summary

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample: S2Q1298-ECC1287
Lab FileID: 2Q92731.D

PFOA	20.000	17.678	-11.6	88.4
PFOS	20.000	17.427	-12.9	87.1
PFPeA	20.000	17.704	-11.5	88.5
PFPeS	20.000	17.448	-12.8	87.2
PFTeDA	20.000	17.718	-11.4	88.6
PFTrDA	20.000	16.873	-15.6	84.4
PFUnDA	20.000	16.994	-15.0	85.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.509	-12.5	87.5
13C3-HFPO-DA	20.000	20.776	3.9	103.9
9Cl-PF3ONS	20.000	16.529	-17.4	82.6
ADONA	20.000	17.061	-14.7	85.3
HFPO-DA	20.000	18.065	-9.7	90.3
M3-HFPO-DA	---	--ISTD--		
M3-MeFOSA	---	--ISTD--		
MeFOSA	20.000	18.574	-7.1	92.9
d3-MeFOSA	20.000	19.666	-1.7	98.3

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1287 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S2Q1287-IC1287	2Q91955.D	05/27/22 11:36	n/a	Mass Calibration Verification
S2Q1287-IC1287	2Q91956.D	05/27/22 11:54	n/a	Initial cal 0.5
S2Q1287-IC1287	2Q91957.D	05/27/22 12:18	n/a	Initial cal 1
S2Q1287-IC1287	2Q91958.D	05/27/22 12:42	n/a	Initial cal 2
S2Q1287-IC1287	2Q91959.D	05/27/22 13:00	n/a	Initial cal 5
S2Q1287-IC1287	2Q91960.D	05/27/22 13:19	n/a	Initial cal 10
S2Q1287-ICC1287	2Q91961.D	05/27/22 13:38	n/a	Initial cal 20
S2Q1287-IC1287	2Q91962.D	05/27/22 13:57	n/a	Initial cal 50
S2Q1287-IC1287	2Q91963.D	05/27/22 14:16	n/a	Initial cal 100
S2Q1287-IBLK	2Q91964.D	05/27/22 14:34	n/a	Instrument Blank
S2Q1287-IBLK	2Q91964.D	05/27/22 14:34	n/a	Instrument Blank
S2Q1287-ICV1287	2Q91965.D	05/27/22 14:53	n/a	Initial cal verification 20
S2Q1287-RT	2Q91966.D	05/27/22 15:13	n/a	Retention Time Marker
S2Q1287-CC1287	2Q91967.D	05/27/22 15:31	n/a	Continuing cal 1.0LL
FA95503-1	2Q91968.D	05/27/22 15:50	OP91218	(used for QC only; not part of job FA95742)
OP91218-MS	2Q91969.D	05/27/22 16:09	OP91218	Matrix Spike
OP91218-MSD	2Q91970.D	05/27/22 16:28	OP91218	Matrix Spike Duplicate
ZZZZZZ	2Q91971.D	05/27/22 16:46	OP91218	(unrelated sample)
ZZZZZZ	2Q91972.D	05/27/22 17:05	OP91218	(unrelated sample)
ZZZZZZ	2Q91973.D	05/27/22 17:24	OP91218	(unrelated sample)
FA95543-19	2Q91974.D	05/27/22 17:43	OP91224	(used for QC only; not part of job FA95742)
ZZZZZZ	2Q91975.D	05/27/22 18:01	OP91224	(unrelated sample)
ZZZZZZ	2Q91976.D	05/27/22 18:20	OP91224	(unrelated sample)
ZZZZZZ	2Q91977.D	05/27/22 18:39	OP91224	(unrelated sample)
S2Q1287-CC1287	2Q91978.D	05/27/22 18:58	n/a	Continuing cal 20
ZZZZZZ	2Q91980.D	05/27/22 19:35	OP91224	(unrelated sample)
ZZZZZZ	2Q91981.D	05/27/22 19:54	OP91224	(unrelated sample)
ZZZZZZ	2Q91982.D	05/27/22 20:13	OP91224	(unrelated sample)
ZZZZZZ	2Q91984.D	05/27/22 20:50	OP91224	(unrelated sample)
ZZZZZZ	2Q91985.D	05/27/22 21:09	OP91224	(unrelated sample)
ZZZZZZ	2Q91986.D	05/27/22 21:28	OP91224	(unrelated sample)
ZZZZZZ	2Q91987.D	05/27/22 21:47	OP91224	(unrelated sample)
ZZZZZZ	2Q91988.D	05/27/22 22:05	OP91224	(unrelated sample)
ZZZZZZ	2Q91989.D	05/27/22 22:24	OP91224	(unrelated sample)
S2Q1287-CC1287	2Q91990.D	05/27/22 22:43	n/a	Continuing cal 20
FA95543-18	2Q91992.D	05/27/22 23:20	OP91224	(used for QC only; not part of job FA95742)
OP91224-MS	2Q91993.D	05/27/22 23:39	OP91224	Matrix Spike
OP91224-MSD	2Q91994.D	05/27/22 23:58	OP91224	Matrix Spike Duplicate
FA95543-19	2Q91995.D	05/28/22 00:17	OP91224	(used for QC only; not part of job FA95742)
OP91224-MS2	2Q91996.D	05/28/22 00:35	OP91224	Matrix Spike
OP91224-MSD2	2Q91997.D	05/28/22 00:54	OP91224	Matrix Spike Duplicate
ZZZZZZ	2Q91998.D	05/28/22 01:13	OP91218	(unrelated sample)
S2Q1287-CC1287	2Q91999.D	05/28/22 01:32	n/a	Continuing cal 20
S2Q1287-CC1287	2Q92001.D	05/28/22 02:09	n/a	Continuing cal 1.0LL
OP91228-BS	2Q92002.D	05/28/22 02:28	OP91228	Blank Spike
OP91228-MB	2Q92003.D	05/28/22 02:47	OP91228	Method Blank

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1287 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
FA95597-1	2Q92004.D	05/28/22 03:05	OP91228	(used for QC only; not part of job FA95742)
OP91228-MS	2Q92005.D	05/28/22 03:24	OP91228	Matrix Spike
OP91228-MSD	2Q92006.D	05/28/22 03:43	OP91228	Matrix Spike Duplicate
ZZZZZZ	2Q92007.D	05/28/22 04:02	OP91228	(unrelated sample)
ZZZZZZ	2Q92008.D	05/28/22 04:20	OP91228	(unrelated sample)
ZZZZZZ	2Q92009.D	05/28/22 04:39	OP91228	(unrelated sample)
ZZZZZZ	2Q92010.D	05/28/22 04:58	OP91228	(unrelated sample)
ZZZZZZ	2Q92011.D	05/28/22 05:17	OP91228	(unrelated sample)
S2Q1287-CC1287	2Q92012.D	05/28/22 05:35	n/a	Continuing cal 20
ZZZZZZ	2Q92014.D	05/28/22 06:13	OP91228	(unrelated sample)
ZZZZZZ	2Q92015.D	05/28/22 06:32	OP91228	(unrelated sample)
ZZZZZZ	2Q92016.D	05/28/22 06:50	OP91228	(unrelated sample)
ZZZZZZ	2Q92017.D	05/28/22 07:09	OP91228	(unrelated sample)
S2Q1287-CC1287	2Q92018.D	05/28/22 07:28	n/a	Continuing cal 20
S2Q1287-CC1287	2Q92020.D	05/28/22 08:05	n/a	Continuing cal 1.0LL
OP91258-BS	2Q92021.D	05/28/22 08:24	OP91258	Blank Spike
OP91258-MB	2Q92022.D	05/28/22 08:43	OP91258	Method Blank
FA95492-1	2Q92023.D	05/28/22 09:02	OP91258	(used for QC only; not part of job FA95742)
OP91258-MS1	2Q92024.D	05/28/22 09:20	OP91258	Matrix Spike
OP91258-MSD1	2Q92025.D	05/28/22 09:39	OP91258	Matrix Spike Duplicate
ZZZZZZ	2Q92026.D	05/28/22 09:58	OP91258	(unrelated sample)
ZZZZZZ	2Q92027.D	05/28/22 10:17	OP91258	(unrelated sample)
ZZZZZZ	2Q92028.D	05/28/22 10:35	OP91258	(unrelated sample)
ZZZZZZ	2Q92029.D	05/28/22 10:54	OP91258	(unrelated sample)
FA95494-2	2Q92030.D	05/28/22 11:13	OP91258	(used for QC only; not part of job FA95742)
S2Q1287-CC1287	2Q92031.D	05/28/22 11:32	n/a	Continuing cal 20
OP91258-MS2	2Q92033.D	05/28/22 12:09	OP91258	Matrix Spike
OP91258-MSD2	2Q92034.D	05/28/22 12:28	OP91258	Matrix Spike Duplicate
ZZZZZZ	2Q92035.D	05/28/22 12:47	OP91258	(unrelated sample)
ZZZZZZ	2Q92036.D	05/28/22 13:05	OP91258	(unrelated sample)
ZZZZZZ	2Q92037.D	05/28/22 13:48	OP91258	(unrelated sample)
ZZZZZZ	2Q92038.D	05/28/22 14:07	OP91258	(unrelated sample)
ZZZZZZ	2Q92039.D	05/28/22 14:26	OP91258	(unrelated sample)
ZZZZZZ	2Q92040.D	05/28/22 14:45	OP91258	(unrelated sample)
ZZZZZZ	2Q92041.D	05/28/22 15:03	OP91258	(unrelated sample)
ZZZZZZ	2Q92042.D	05/28/22 15:22	OP91258	(unrelated sample)
S2Q1287-ECC1287	2Q92043.D	05/28/22 15:41	n/a	Ending cal 20

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1293 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S2Q1293-RT	2Q92303.D	06/02/22 10:59	n/a	Retention Time Marker
S2Q1293-IBLK	2Q92305.D	06/02/22 11:36	n/a	Instrument Blank
S2Q1293-IBLK	2Q92305.D	06/02/22 11:36	n/a	Instrument Blank
S2Q1293-CC1287	2Q92306.D	06/02/22 15:12	n/a	Continuing cal 20
S2Q1293-CC1287	2Q92307.D	06/02/22 15:31	n/a	Continuing cal 1.0LL
OP91428-BS	2Q92308.D	06/02/22 15:50	OP91428	Blank Spike
OP91428-MB	2Q92309.D	06/02/22 16:09	OP91428	Method Blank
ZZZZZZ	2Q92310.D	06/02/22 16:27	OP91428	(unrelated sample)
ZZZZZZ	2Q92311.D	06/02/22 16:46	OP91428	(unrelated sample)
ZZZZZZ	2Q92312.D	06/02/22 17:05	OP91428	(unrelated sample)
ZZZZZZ	2Q92313.D	06/02/22 17:24	OP91428	(unrelated sample)
ZZZZZZ	2Q92314.D	06/02/22 17:42	OP91428	(unrelated sample)
ZZZZZZ	2Q92315.D	06/02/22 18:01	OP91428	(unrelated sample)
ZZZZZZ	2Q92316.D	06/02/22 18:20	OP91428	(unrelated sample)
ZZZZZZ	2Q92317.D	06/02/22 18:39	OP91428	(unrelated sample)
S2Q1293-CC1287	2Q92318.D	06/02/22 18:57	n/a	Continuing cal 20
ZZZZZZ	2Q92320.D	06/02/22 19:35	OP91428	(unrelated sample)
ZZZZZZ	2Q92321.D	06/02/22 19:54	OP91428	(unrelated sample)
ZZZZZZ	2Q92322.D	06/02/22 20:12	OP91428	(unrelated sample)
ZZZZZZ	2Q92323.D	06/02/22 20:31	OP91428	(unrelated sample)
FA95742-1	2Q92324.D	06/02/22 20:50	OP91428	S118-SW0005-000.0-20220516
FA95742-2	2Q92326.D	06/02/22 21:27	OP91428	S118-SW0006-000.0-20220516
OP91428-DUP	2Q92327.D	06/02/22 21:46	OP91428	Duplicate
FA95742-3	2Q92328.D	06/02/22 22:05	OP91428	S118-SW0007-000.0-20220516
FA95742-4	2Q92329.D	06/02/22 22:24	OP91428	S118-FD-20220516-01
S2Q1293-CC1287	2Q92330.D	06/02/22 22:42	n/a	Continuing cal 20
FA95742-5	2Q92332.D	06/02/22 23:20	OP91428	S118-FB-20220516-01
FA95742-6	2Q92333.D	06/02/22 23:39	OP91428	S118-EB-20220516-01
S2Q1293-ECC1287	2Q92334.D	06/02/22 23:57	n/a	Ending cal 20

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1294 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S2Q1294-RT	2Q92338.D	06/03/22 10:23	n/a	Retention Time Marker
S2Q1294-IBLK	2Q92340.D	06/03/22 11:02	n/a	Instrument Blank
S2Q1294-IBLK	2Q92340.D	06/03/22 11:02	n/a	Instrument Blank
S2Q1294-CC1287	2Q92341.D	06/03/22 11:25	n/a	Continuing cal 20
S2Q1294-CC1287	2Q92342.D	06/03/22 11:45	n/a	Continuing cal 1.0LL
ZZZZZZ	2Q92344.D	06/03/22 12:23	OP91428	(unrelated sample)
ZZZZZZ	2Q92345.D	06/03/22 12:41	OP91428	(unrelated sample)
FA95742-1	2Q92346.D	06/03/22 13:00	OP91428	S118-SW0005-000.0-20220516
OP91428-MS	2Q92347.D	06/03/22 13:19	OP91428	Matrix Spike
FA95742-2	2Q92348.D	06/03/22 13:38	OP91428	S118-SW0006-000.0-20220516
FA95742-4	2Q92351.D	06/03/22 14:34	OP91428	S118-FD-20220516-01
S2Q1294-CC1287	2Q92352.D	06/03/22 14:53	n/a	Continuing cal 20
S2Q1294-CC1287	2Q92354.D	06/03/22 15:39	n/a	Continuing cal 1.0LL
OP91429-BS	2Q92355.D	06/03/22 15:58	OP91429	Blank Spike
OP91429-MB	2Q92356.D	06/03/22 16:16	OP91429	Method Blank
ZZZZZZ	2Q92357.D	06/03/22 16:35	OP91429	(unrelated sample)
ZZZZZZ	2Q92358.D	06/03/22 16:54	OP91429	(unrelated sample)
ZZZZZZ	2Q92359.D	06/03/22 17:13	OP91429	(unrelated sample)
ZZZZZZ	2Q92360.D	06/03/22 17:31	OP91429	(unrelated sample)
ZZZZZZ	2Q92361.D	06/03/22 17:50	OP91429	(unrelated sample)
ZZZZZZ	2Q92362.D	06/03/22 18:09	OP91429	(unrelated sample)
ZZZZZZ	2Q92363.D	06/03/22 18:28	OP91429	(unrelated sample)
ZZZZZZ	2Q92364.D	06/03/22 18:46	OP91429	(unrelated sample)
S2Q1294-CC1287	2Q92365.D	06/03/22 19:05	n/a	Continuing cal 20
ZZZZZZ	2Q92367.D	06/03/22 19:43	OP91429	(unrelated sample)
ZZZZZZ	2Q92368.D	06/03/22 20:01	OP91429	(unrelated sample)
ZZZZZZ	2Q92369.D	06/03/22 20:20	OP91429	(unrelated sample)
ZZZZZZ	2Q92371.D	06/03/22 20:58	OP91429	(unrelated sample)
ZZZZZZ	2Q92372.D	06/03/22 21:16	OP91429	(unrelated sample)
FA95746-15	2Q92373.D	06/03/22 21:35	OP91429	(used for QC only; not part of job FA95742)
OP91429-MS	2Q92374.D	06/03/22 21:54	OP91429	Matrix Spike
OP91429-MSD	2Q92375.D	06/03/22 22:13	OP91429	Matrix Spike Duplicate
ZZZZZZ	2Q92376.D	06/03/22 22:31	OP91429	(unrelated sample)
S2Q1294-CC1287	2Q92377.D	06/03/22 22:50	n/a	Continuing cal 20
ZZZZZZ	2Q92379.D	06/03/22 23:28	OP91429	(unrelated sample)
ZZZZZZ	2Q92381.D	06/04/22 00:05	OP91429	(unrelated sample)
ZZZZZZ	2Q92382.D	06/04/22 00:24	OP91429	(unrelated sample)
ZZZZZZ	2Q92383.D	06/04/22 00:43	OP91372	(unrelated sample)
S2Q1294-ECC1287	2Q92384.D	06/04/22 01:01	n/a	Ending cal 20

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1298 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S2Q1298-RT	2Q92675.D	06/07/22 20:47	n/a	Retention Time Marker
S2Q1298-IBLK	2Q92677.D	06/07/22 21:24	n/a	Instrument Blank
S2Q1298-IBLK	2Q92677.D	06/07/22 21:24	n/a	Instrument Blank
S2Q1298-CC1287	2Q92678.D	06/07/22 21:43	n/a	Continuing cal 20
S2Q1298-CC1287	2Q92679.D	06/07/22 22:02	n/a	Continuing cal 1.0LL
ZZZZZZ	2Q92680.D	06/07/22 22:21	OP91486	(unrelated sample)
FA95898-4	2Q92681.D	06/07/22 22:39	OP91486	(used for QC only; not part of job FA95742)
ZZZZZZ	2Q92682.D	06/07/22 22:58	OP91486	(unrelated sample)
FA95898-6	2Q92683.D	06/07/22 23:17	OP91486	(used for QC only; not part of job FA95742)
ZZZZZZ	2Q92684.D	06/07/22 23:36	OP91486	(unrelated sample)
ZZZZZZ	2Q92685.D	06/07/22 23:54	OP91486	(unrelated sample)
ZZZZZZ	2Q92686.D	06/08/22 00:13	OP91486	(unrelated sample)
ZZZZZZ	2Q92687.D	06/08/22 00:32	OP91486	(unrelated sample)
ZZZZZZ	2Q92688.D	06/08/22 00:51	OP91486	(unrelated sample)
ZZZZZZ	2Q92689.D	06/08/22 01:09	OP91486	(unrelated sample)
S2Q1298-CC1287	2Q92690.D	06/08/22 01:28	n/a	Continuing cal 20
S2Q1298-CC1287	2Q92692.D	06/08/22 02:06	n/a	Continuing cal 1.0LL
OP91495-BS	2Q92693.D	06/08/22 02:24	OP91495	Blank Spike
OP91495-MB	2Q92694.D	06/08/22 02:43	OP91495	Method Blank
ZZZZZZ	2Q92695.D	06/08/22 03:02	OP91495	(unrelated sample)
ZZZZZZ	2Q92696.D	06/08/22 03:21	OP91495	(unrelated sample)
ZZZZZZ	2Q92697.D	06/08/22 03:39	OP91495	(unrelated sample)
ZZZZZZ	2Q92698.D	06/08/22 03:58	OP91495	(unrelated sample)
ZZZZZZ	2Q92699.D	06/08/22 04:17	OP91495	(unrelated sample)
ZZZZZZ	2Q92700.D	06/08/22 04:36	OP91495	(unrelated sample)
ZZZZZZ	2Q92701.D	06/08/22 04:54	OP91495	(unrelated sample)
ZZZZZZ	2Q92702.D	06/08/22 05:13	OP91495	(unrelated sample)
S2Q1298-CC1287	2Q92703.D	06/08/22 05:32	n/a	Continuing cal 20
ZZZZZZ	2Q92705.D	06/08/22 06:09	OP91495	(unrelated sample)
ZZZZZZ	2Q92706.D	06/08/22 06:28	OP91495	(unrelated sample)
FA95941-16	2Q92707.D	06/08/22 06:47	OP91495	(used for QC only; not part of job FA95742)
OP91495-MS	2Q92708.D	06/08/22 07:06	OP91495	Matrix Spike
OP91495-MSD	2Q92709.D	06/08/22 07:24	OP91495	Matrix Spike Duplicate
ZZZZZZ	2Q92710.D	06/08/22 07:43	OP91495	(unrelated sample)
ZZZZZZ	2Q92711.D	06/08/22 08:02	OP91495	(unrelated sample)
ZZZZZZ	2Q92712.D	06/08/22 08:21	OP91495	(unrelated sample)
ZZZZZZ	2Q92713.D	06/08/22 08:39	OP91495	(unrelated sample)
S2Q1298-CC1287	2Q92714.D	06/08/22 08:59	n/a	Continuing cal 20
ZZZZZZ	2Q92716.D	06/08/22 09:52	OP91495	(unrelated sample)
ZZZZZZ	2Q92717.D	06/08/22 10:10	OP91495	(unrelated sample)
ZZZZZZ	2Q92718.D	06/08/22 10:32	OP91495	(unrelated sample)
ZZZZZZ	2Q92719.D	06/08/22 10:51	OP91495	(unrelated sample)
S2Q1298-CC1287	2Q92720.D	06/08/22 11:09	n/a	Continuing cal 20
S2Q1298-CC1287	2Q92722.D	06/08/22 11:52	n/a	Continuing cal 1.0LL
OP91510-BS	2Q92723.D	06/08/22 12:11	OP91510	Blank Spike
OP91510-MB	2Q92724.D	06/08/22 12:29	OP91510	Method Blank

Run Sequence Report

Job Number: FA95742
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Run ID: S2Q1298 **Method:** EPA 537M QSM5.3 B-1 **Instrument ID:** GCMS2Q

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
FA95742-3	2Q92725.D	06/08/22 12:48	OP91510	S118-SW0007-000.0-20220516
FA95742-4	2Q92726.D	06/08/22 13:07	OP91510	S118-FD-20220516-01
ZZZZZZ	2Q92727.D	06/08/22 13:26	OP91510	(unrelated sample)
ZZZZZZ	2Q92728.D	06/08/22 13:44	OP91510	(unrelated sample)
ZZZZZZ	2Q92729.D	06/08/22 14:03	OP91510	(unrelated sample)
ZZZZZZ	2Q92730.D	06/08/22 14:22	OP91510	(unrelated sample)
S2Q1298-ECC1287	2Q92731.D	06/08/22 14:41	n/a	Ending cal 20

MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92324.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 8:50:20 PM
Sample Name : FA95742-1
Vial : P6-B6
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

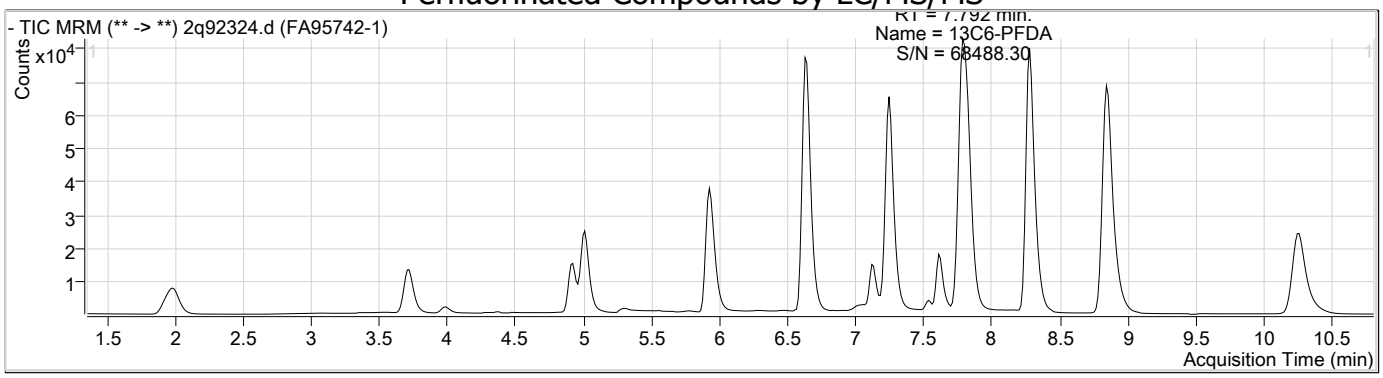
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	49528	20.00	µg/L	-0.013
M4-PFBA	1.977	217.0 -> 172.0	56885	20.00	µg/L	-0.038
M5-PFPeA	3.724	268.0 -> 223.0	63127	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	96995	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	146162	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	213480	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	237986	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	301892	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	362108	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	392477	20.00	µg/L	0.027
M2-PFTeDA	10.255	715.0 -> 670.0	179726	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	48498	20.00	µg/L	-0.025
M3-PFBS	3.979	302.0 -> 99.0	7544	20.00	µg/L	-0.025
M3-PFHxS	5.967	402.0 -> 99.0	11335	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	16466	20.00	µg/L	0.000
M2-4:2FTS	4.909	329.0 -> 81.0	6953	20.00	µg/L	-0.025
M2-6:2FTS	6.634	429.0 -> 81.0	16063	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	24485	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	58704	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	3733	20.00	µg/L	-0.013
M3-MeFOSA	7.539	515.0 -> 169.0	5729	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	6953	14.95	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.7%		
13C2-6:2FTS	6.634	429.0 -> 81.0	16063	15.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%		
13C2-8:2FTS	7.828	529.0 -> 81.0	24485	16.54	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%		
13C2-PFDoDA	8.845	615.0 -> 570.0	392477	14.53	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.6%		
13C2-PFTeDA	10.255	715.0 -> 670.0	179726	7.22	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 36.1%		
13C3-PFBS	3.979	302.0 -> 99.0	7544	14.83	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.2%		
13C3-PFHxS	5.967	402.0 -> 99.0	11335	15.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C4-PFBA	1.977	217.0 -> 172.0	56885	14.72	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.6%		
13C4-PFHpA	5.929	367.0 -> 322.0	146162	15.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.7%		
d5-EtFOSAA	7.748	589.0 -> 419.0	49528	16.32	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%		
13C5-PFHxA	5.014	318.0 -> 273.0	96995	14.36	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%		
13C5-PFPeA	3.724	268.0 -> 223.0	63127	13.85	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

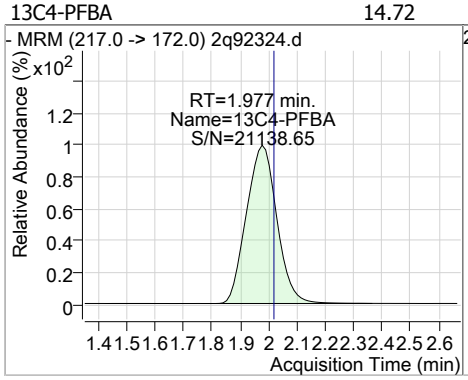
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.2%			
13C6-PFDA	7.792	519.0 -> 474.0	301892	16.57	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%			
13C7-PFUnDA	8.282	570.0 -> 525.0	362108	16.00	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.0%			
13C8-FOSA	7.124	506.0 -> 78.0	48498	13.18	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.9%			
13C8-PFOA	6.649	421.0 -> 376.0	213480	16.58	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%			
13C8-PFOS	7.225	507.0 -> 99.0	16466	15.87	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%			
13C9-PFNA	7.252	472.0 -> 427.0	237986	16.32	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%			
d3-MeFOSAA	7.610	573.0 -> 419.0	58704	15.31	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.5%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	3733	14.34	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.7%			
d3-MeFOSA	7.539	515.0 -> 169.0	5729	4.09	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 20.5%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.983	213.0 -> 169.0	1678	1.15	µg/L		100
PFBS	3.982	299.0 -> 80.0	716	0.57	µg/L		96
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.930	363.0 -> 319.0	4504	0.38	µg/L		99
PFHpS	6.645	449.0 -> 80.0	463	0.35	µg/L	m	99
PFHxA	5.015	313.0 -> 269.0	5575	1.55	µg/L		97
PFHxS	5.967	399.0 -> 80.0	10816	7.60	µg/L	m	96
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.649	413.0 -> 369.0	6489	0.56	µg/L	m	96
PFOS	7.225	499.0 -> 80.0	28512	19.78	µg/L	m	100
PFPeA	3.714	263.0 -> 219.0	1900	0.39	µg/L		100
PFPeS	5.132	349.0 -> 80.0	628	0.73	µg/L		98
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

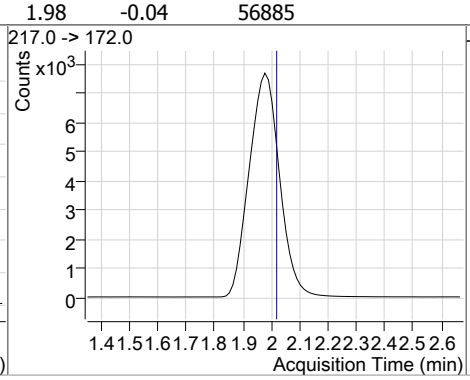
= Qualifier out of range, m = manually integrated, + = Area summed

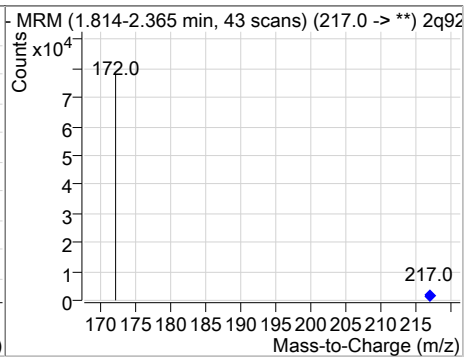
Perfluorinated Compounds by LC/MS/MS



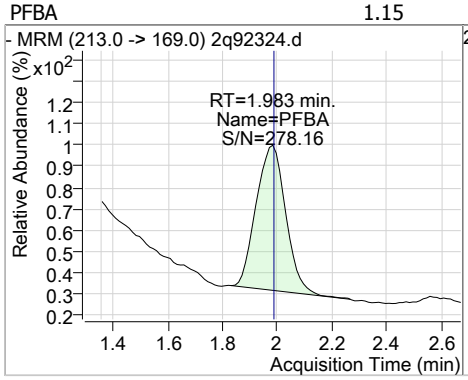
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	14.72	1.98	-0.04	56885				

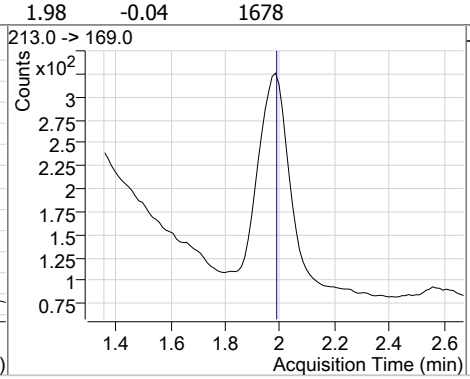


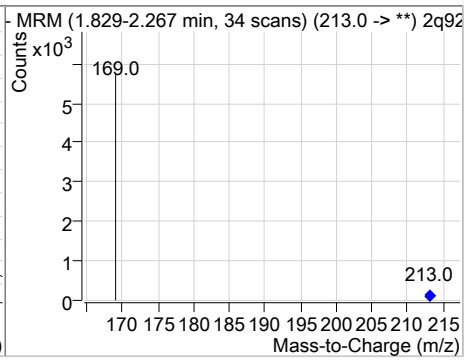




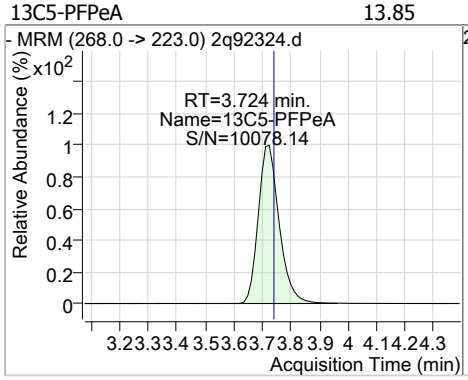
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.15	1.98	-0.04	1678				

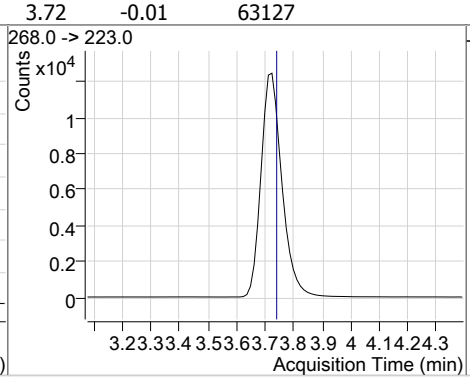


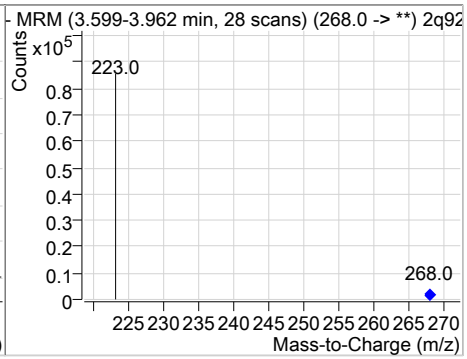




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.85	3.72	-0.01	63127				

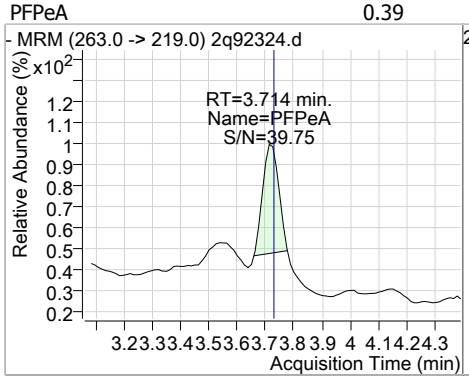


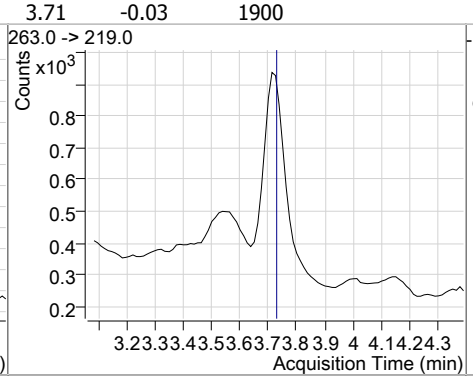


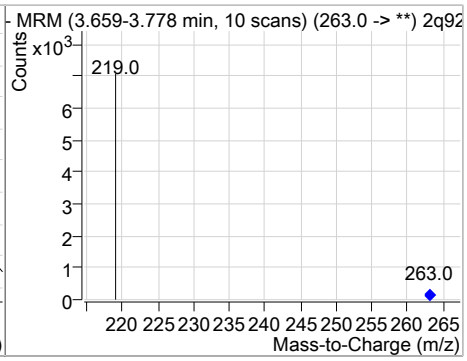


Perfluorinated Compounds by LC/MS/MS

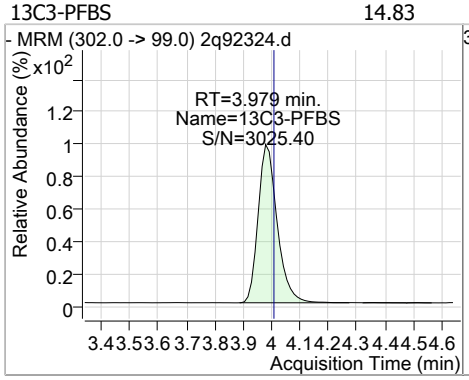
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.39	3.71	-0.03	1900				

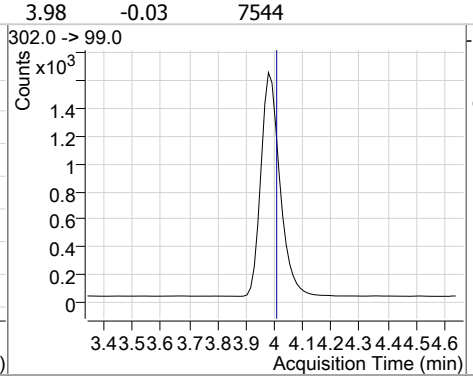


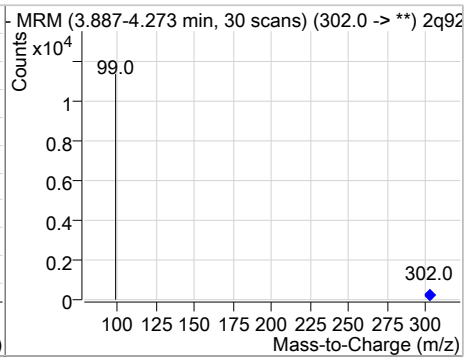




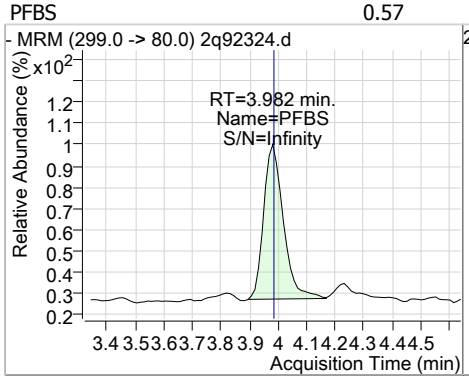
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.83	3.98	-0.03	7544				

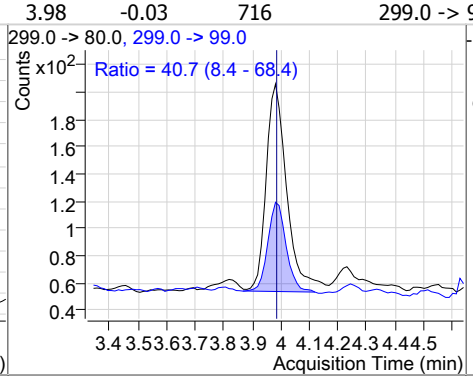


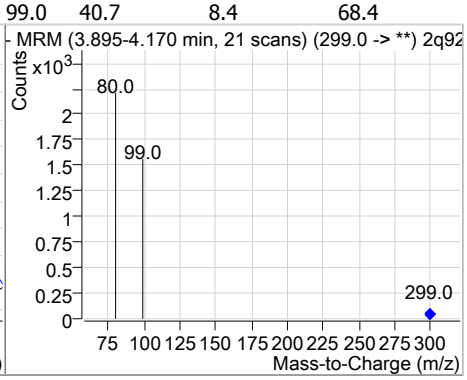




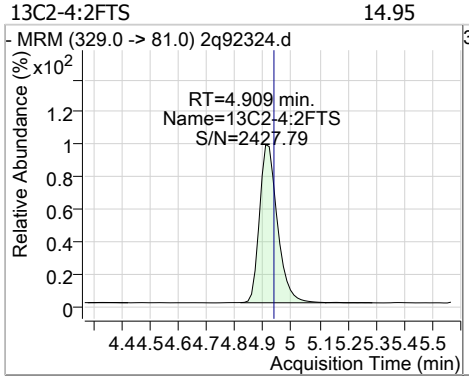
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.57	3.98	-0.03	716	299.0 -> 99.0	40.7	8.4	68.4

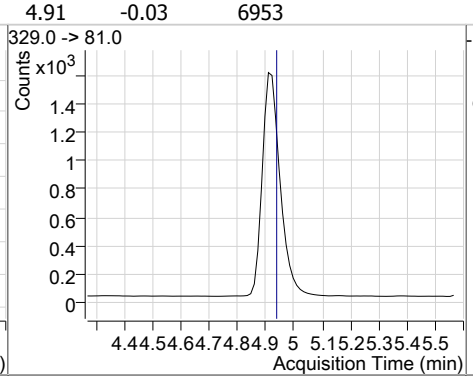


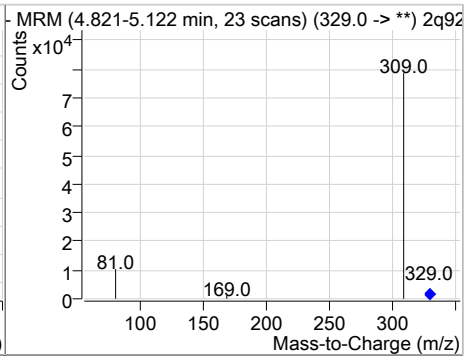




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.95	4.91	-0.03	6953				

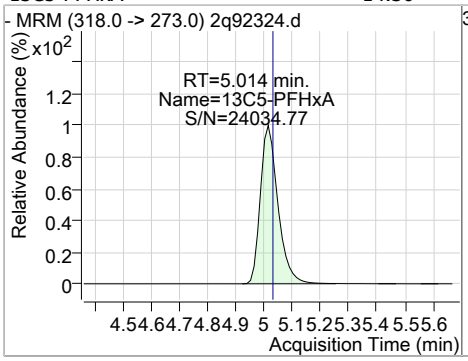


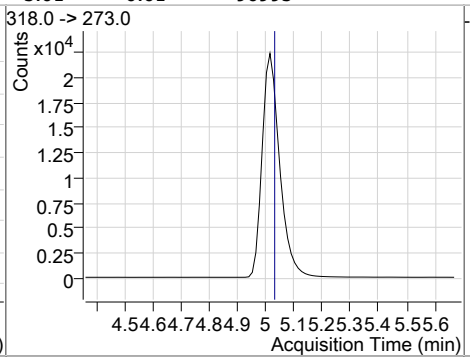


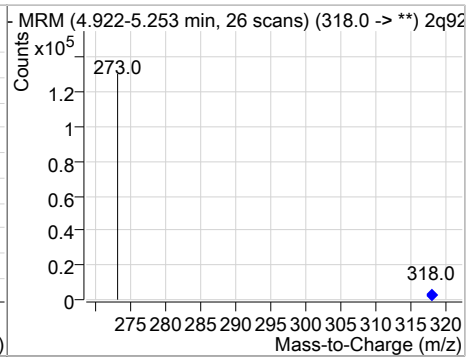


Perfluorinated Compounds by LC/MS/MS

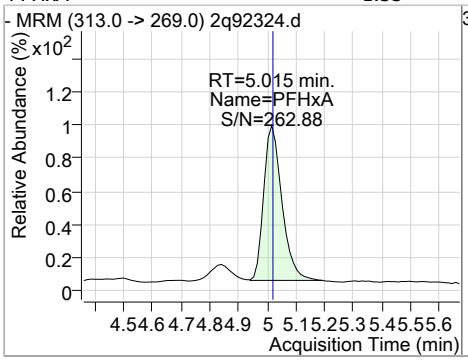
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.36	5.01	-0.01	96995				

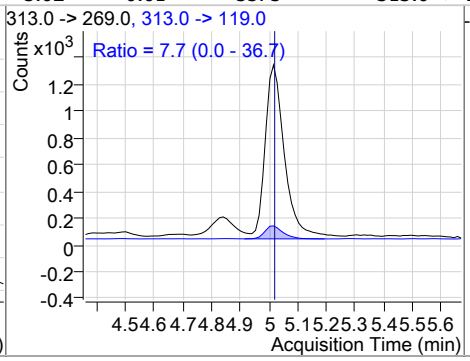


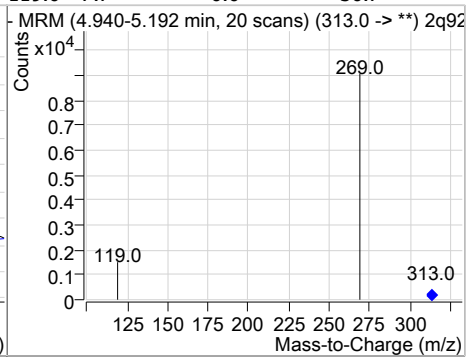




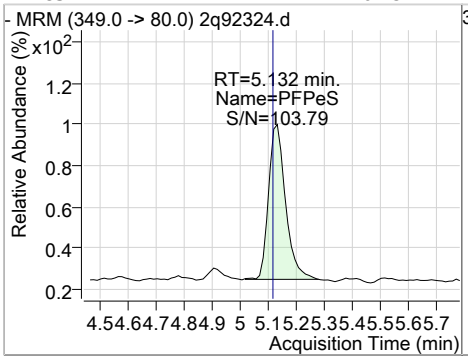
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.55	5.02	-0.01	5575	313.0 -> 119.0	7.7	0.0	36.7

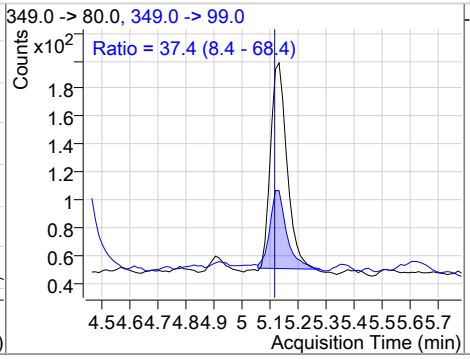


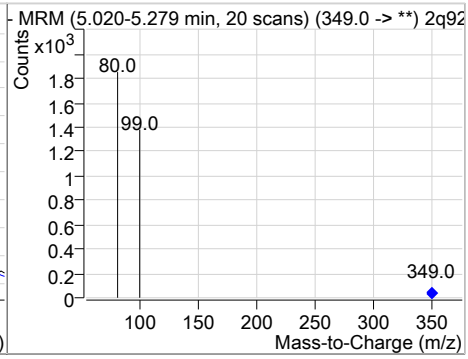




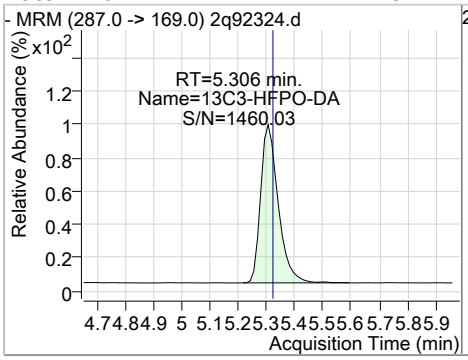
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.73	5.13	-0.01	628	349.0 -> 99.0	37.4	8.4	68.4

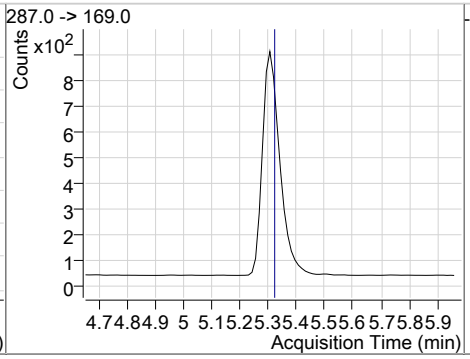


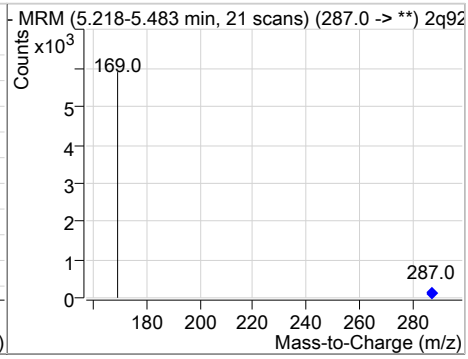




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	14.34	5.31	-0.01	3733				

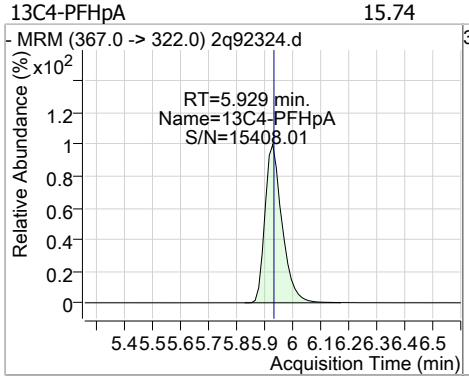


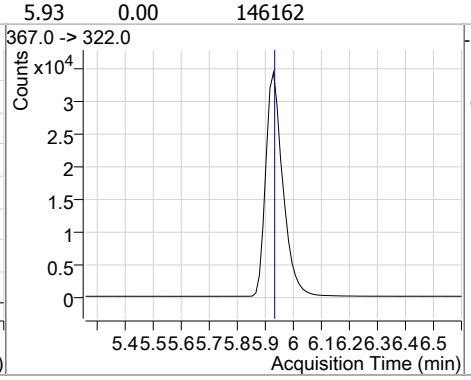


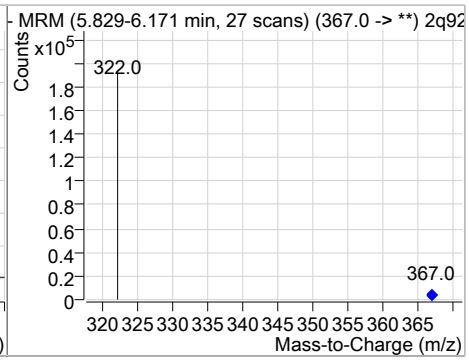


Perfluorinated Compounds by LC/MS/MS

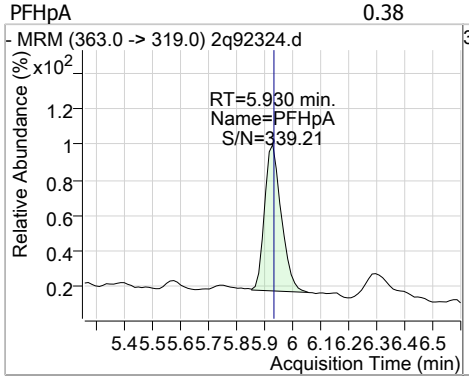
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.74	5.93	0.00	146162				

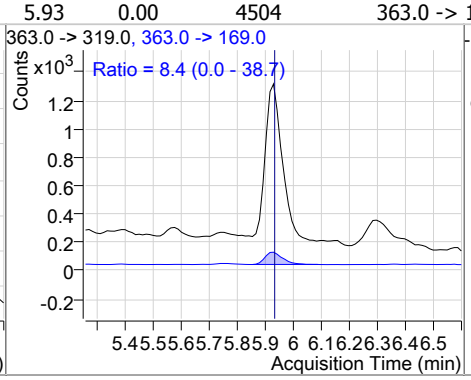


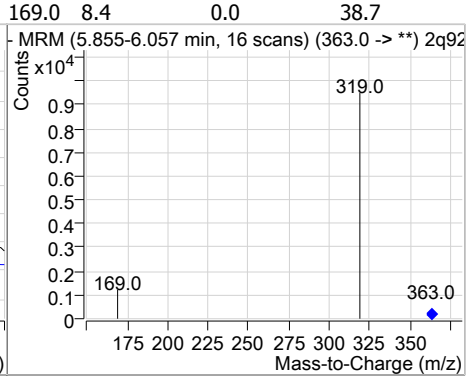




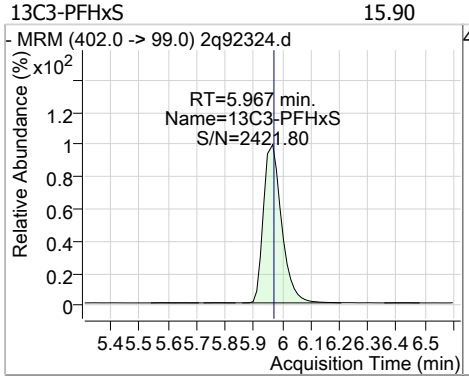
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.38	5.93	0.00	4504	363.0 -> 169.0	8.4	0.0	38.7

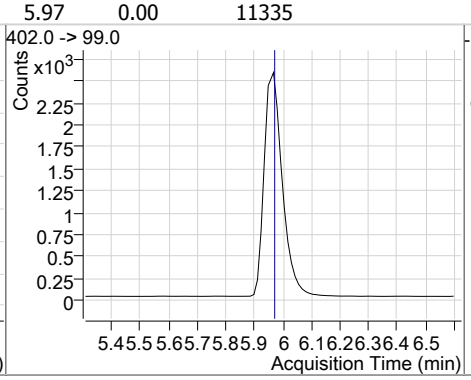


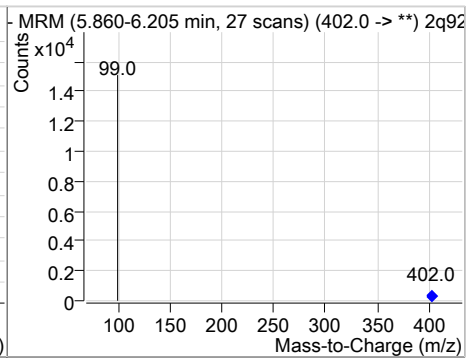




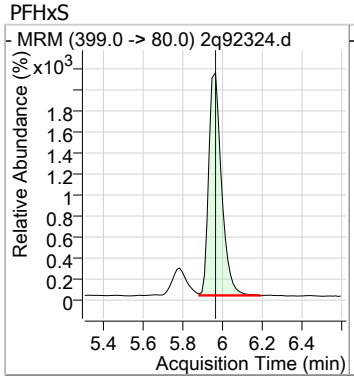
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.90	5.97	0.00	11335				

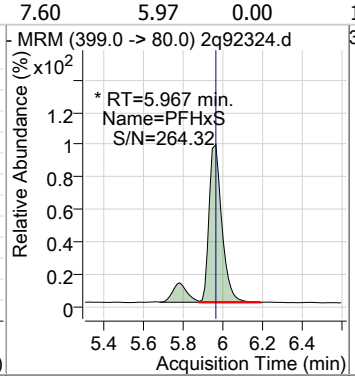


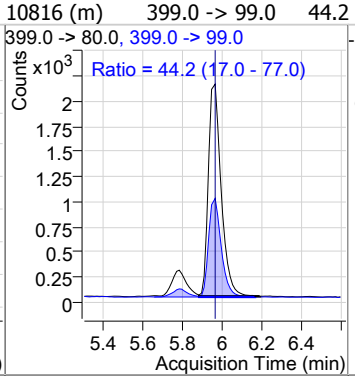


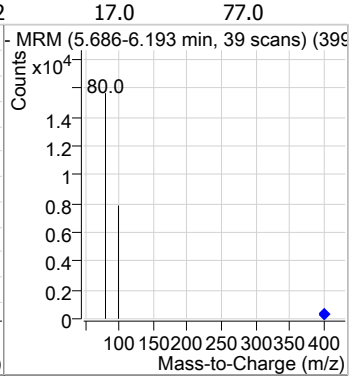


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	7.60	5.97	0.00	10816 (m)	399.0 -> 99.0	44.2	17.0	77.0



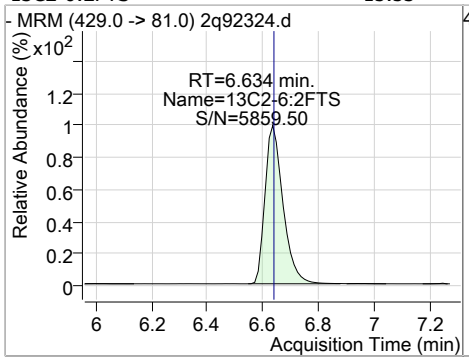


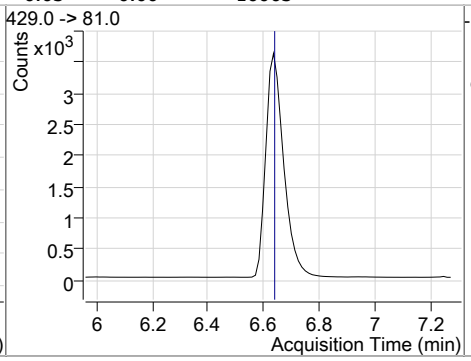


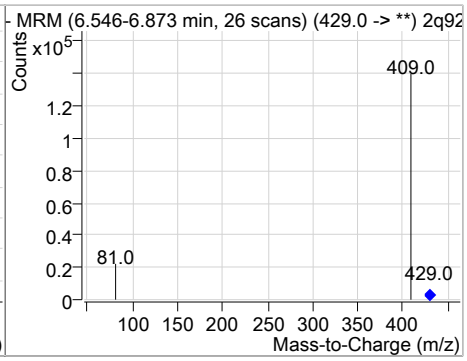


Perfluorinated Compounds by LC/MS/MS

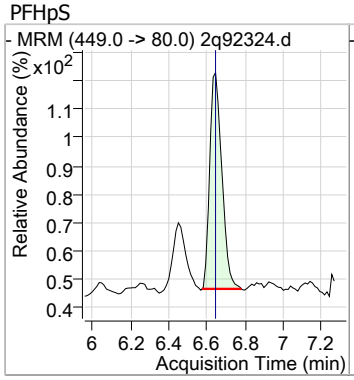
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.53	6.63	0.00	16063				

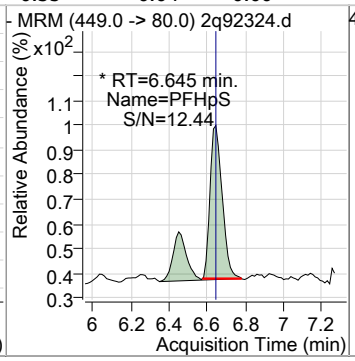


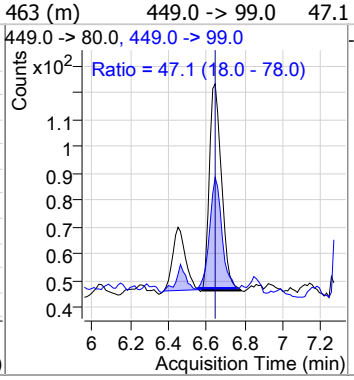


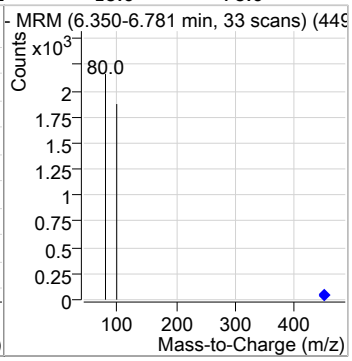


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.35	6.64	0.00	463 (m)	449.0 -> 99.0	47.1	18.0	78.0

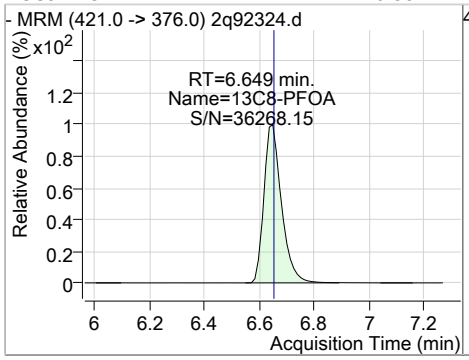


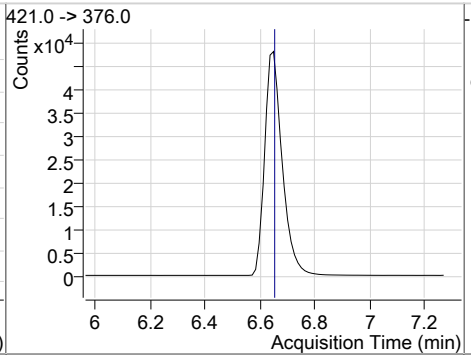


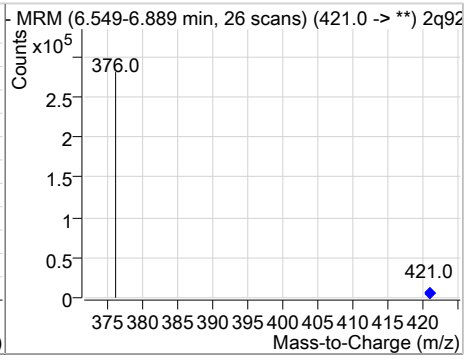




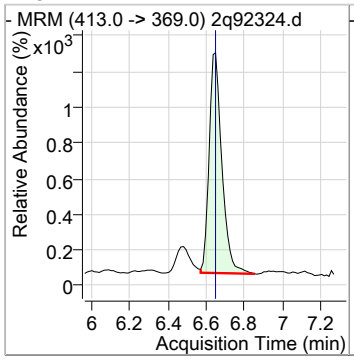
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.58	6.65	0.00	213480				

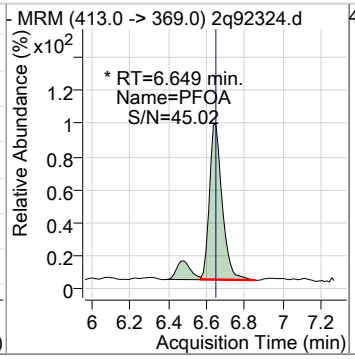


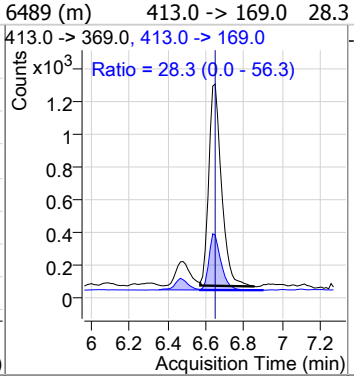


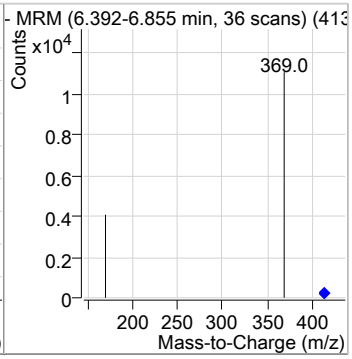


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.56	6.65	0.00	6489 (m)	413.0 -> 169.0	28.3	0.0	56.3



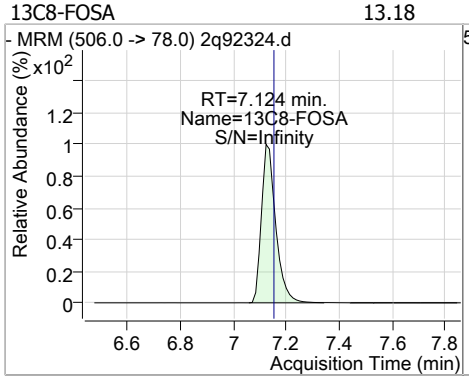


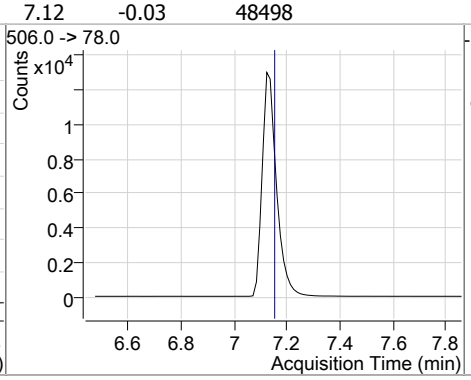


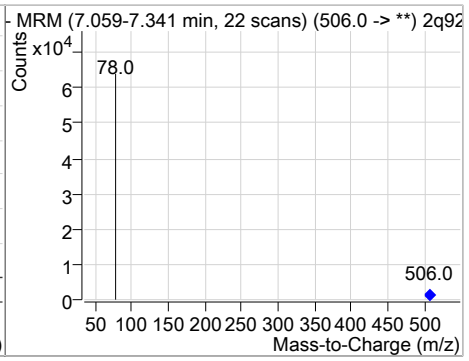


Perfluorinated Compounds by LC/MS/MS

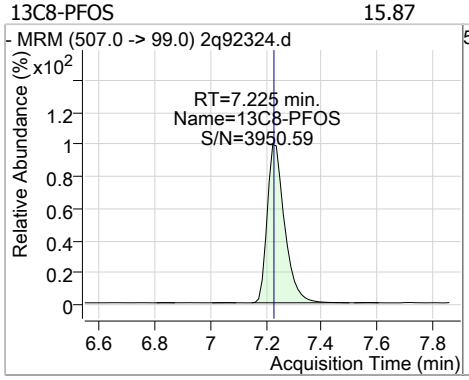
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	13.18	7.12	-0.03	48498				

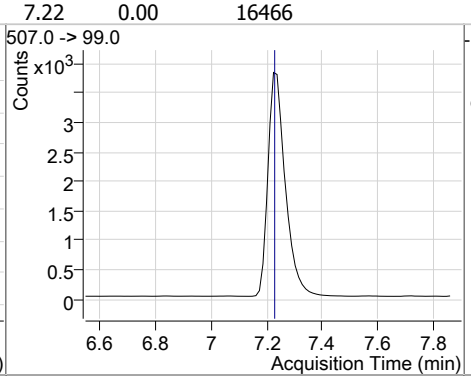


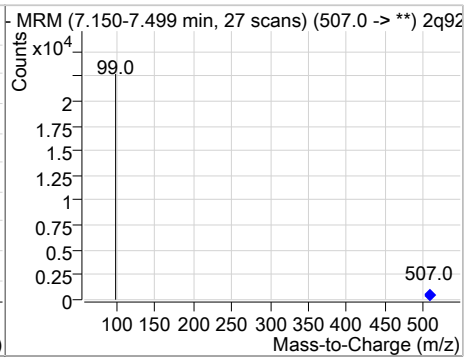




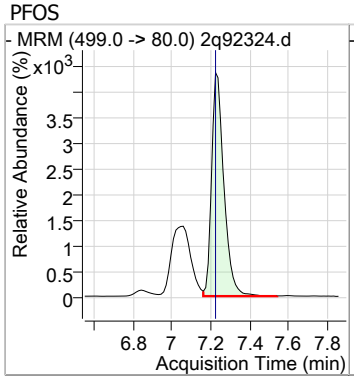
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.87	7.22	0.00	16466				

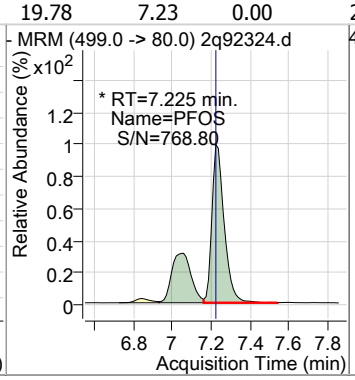


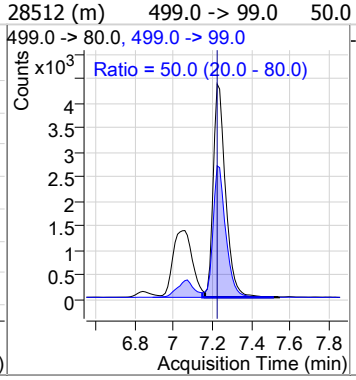


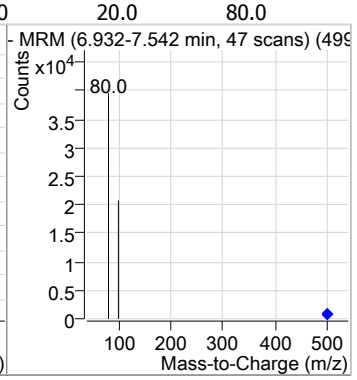


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.78	7.23	0.00	28512 (m)	499.0 -> 99.0	50.0	20.0	80.0

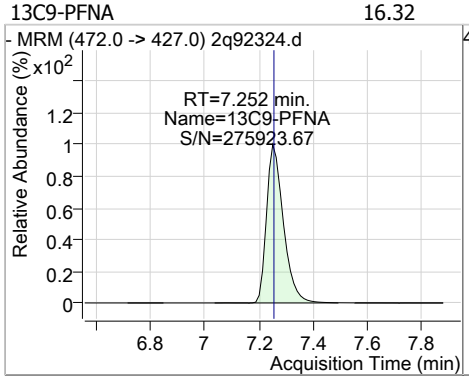


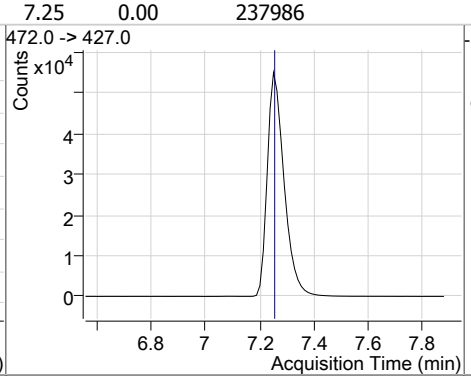


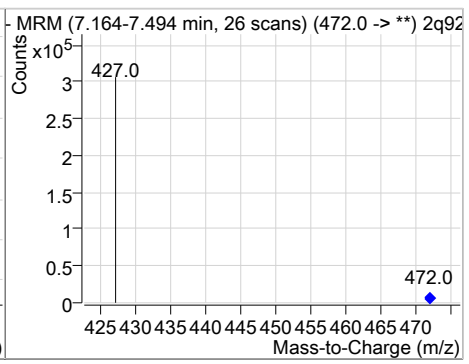




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.32	7.25	0.00	237986				

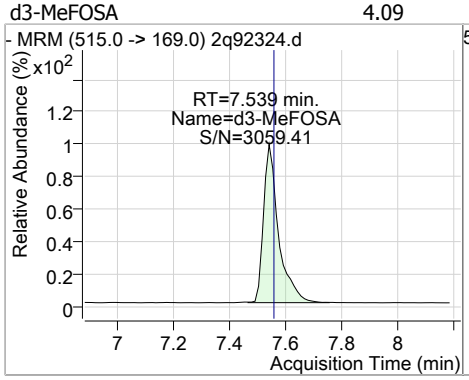


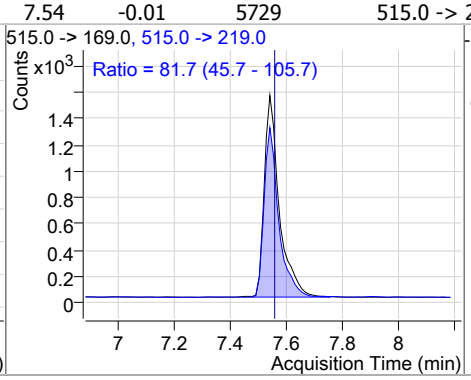


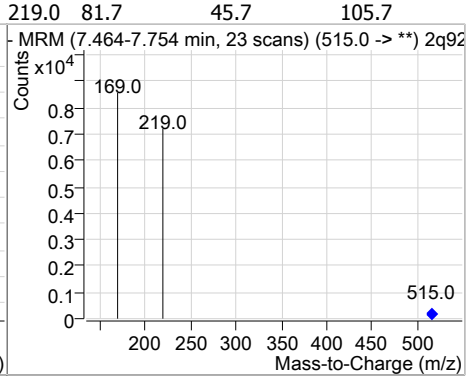


Perfluorinated Compounds by LC/MS/MS

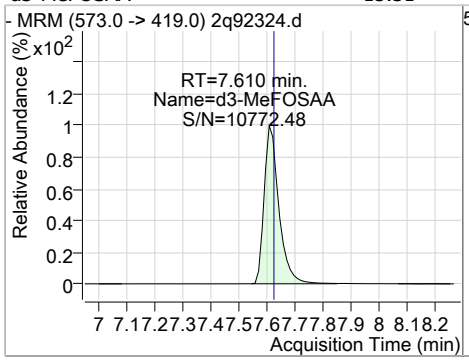
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	4.09	7.54	-0.01	5729	515.0 -> 219.0	81.7	45.7	105.7

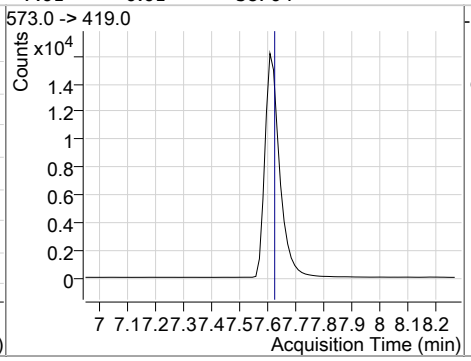


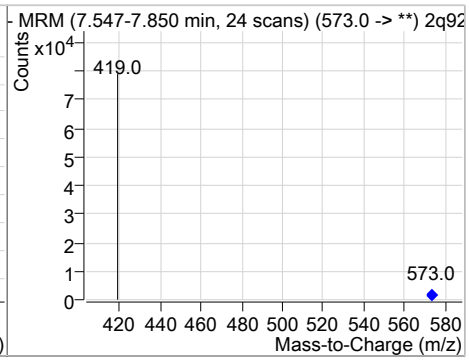




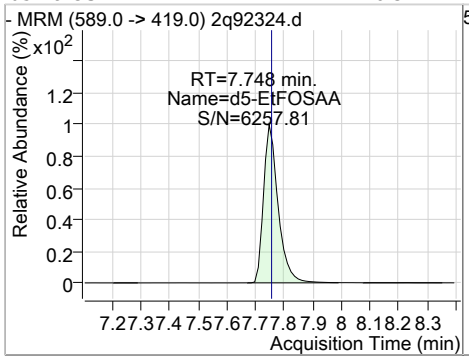
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.31	7.61	-0.01	58704				

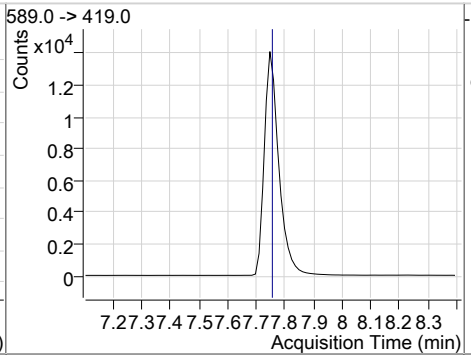


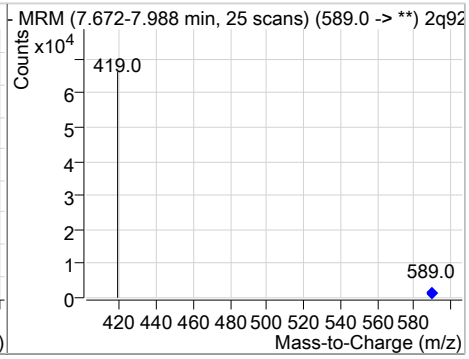




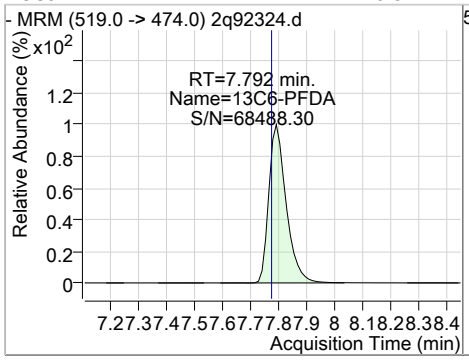
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	16.32	7.75	-0.01	49528				

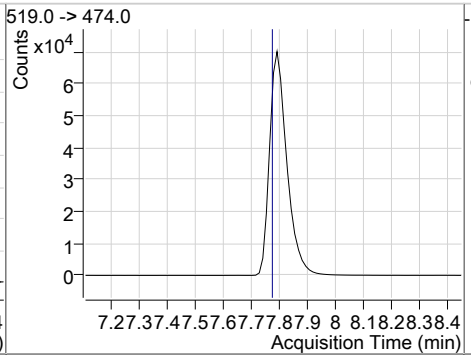


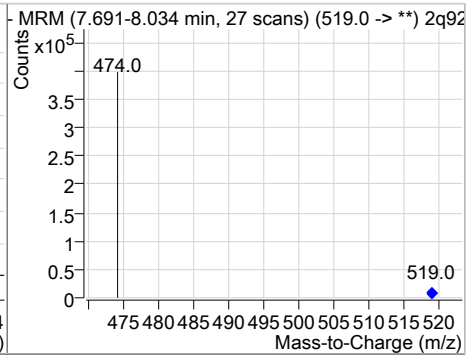




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.57	7.79	0.01	301892				

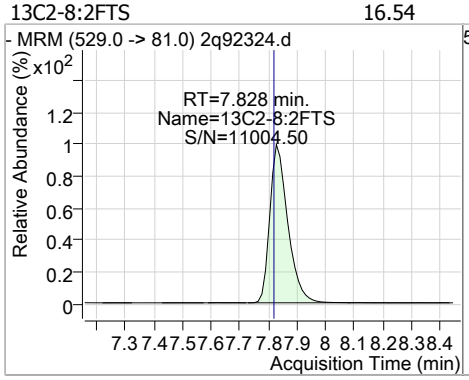


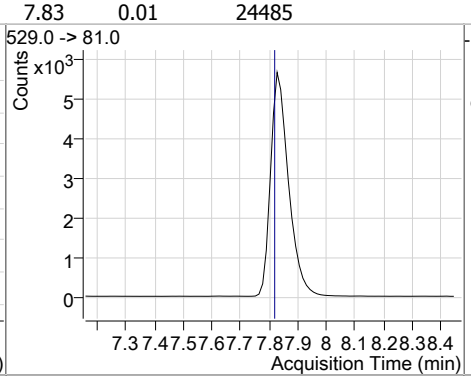


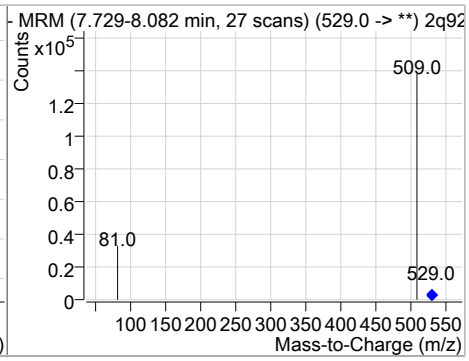


Perfluorinated Compounds by LC/MS/MS

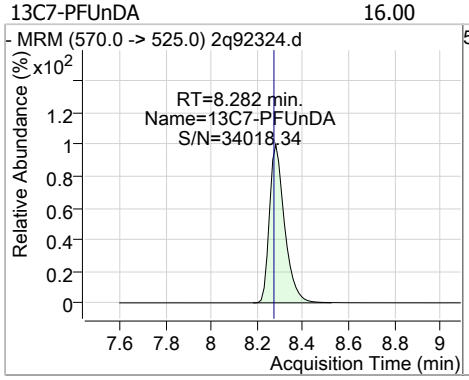
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.54	7.83	0.01	24485				

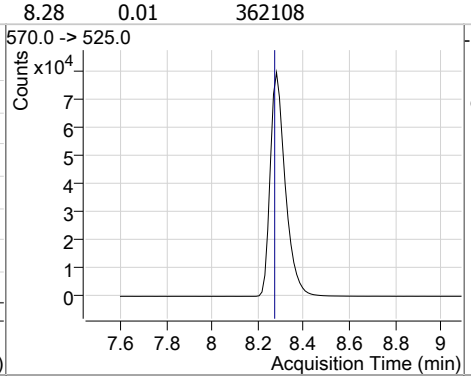


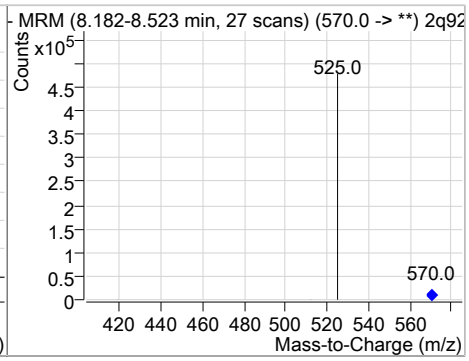




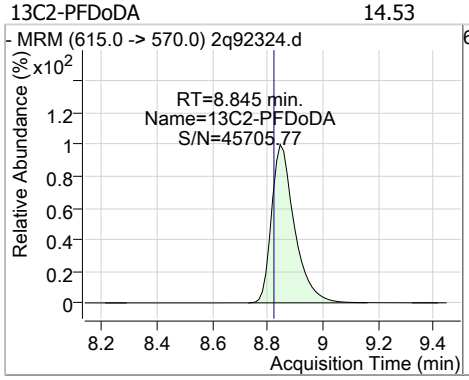
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.00	8.28	0.01	362108				

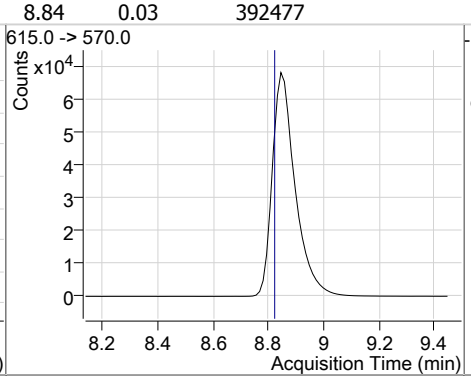


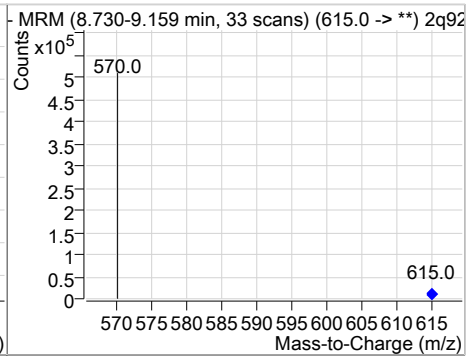




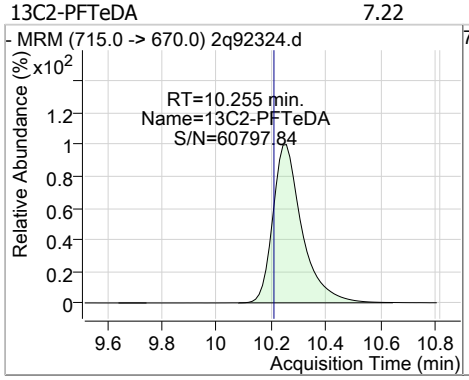
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.53	8.84	0.03	392477				

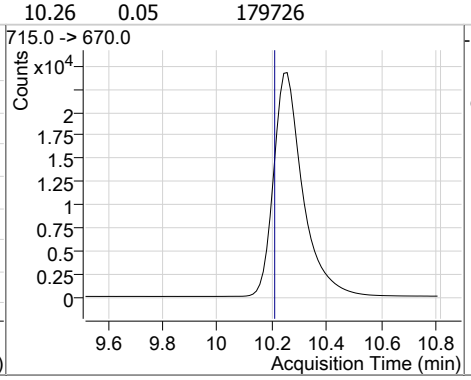


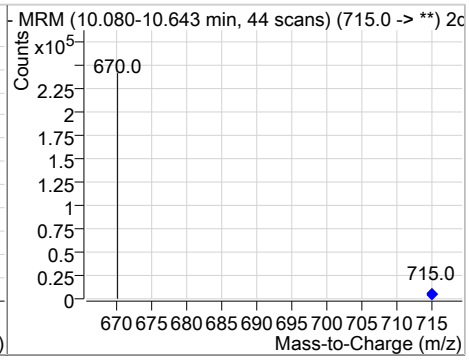




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	7.22	10.26	0.05	179726				







Manual Integration Approval Summary

Sample Number: FA95742-1
Lab FileID: 2Q92324.D
Injection Time: 06/02/22 20:50
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 11:45 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.64	Split peak
Perfluorooctanoic acid	335-67-1		6.65	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92346.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 1:00:44 PM
Sample Name : FA95742-1
Vial : P1-C4
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91428,S2Q1294,125,,,1.0,5,water

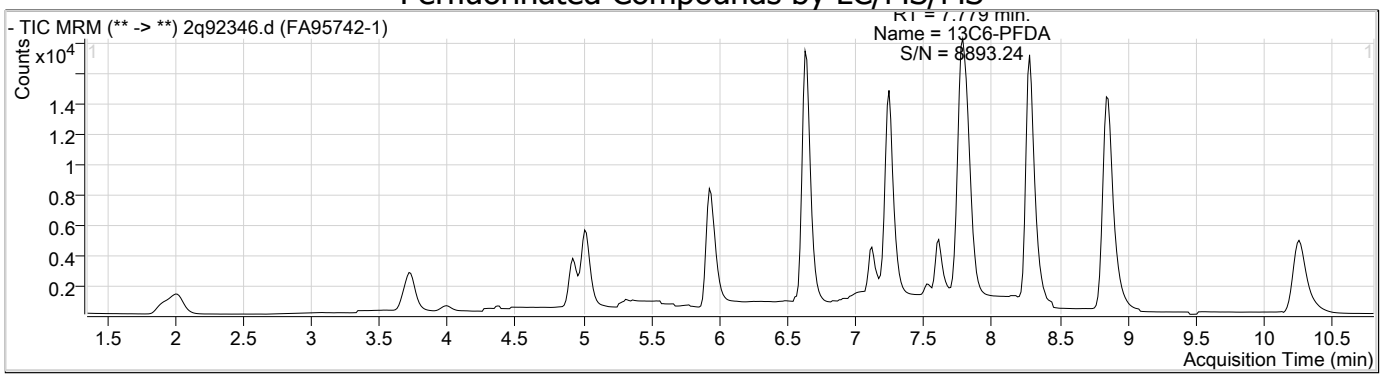
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	10900	20.00	µg/L	-0.013
M4-PFBA	2.002	217.0 -> 172.0	12970	20.00	µg/L	-0.013
M5-PFPeA	3.724	268.0 -> 223.0	14587	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	21041	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	31127	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	43566	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	48123	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	62065	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	72940	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	80277	20.00	µg/L	0.027
M2-PFTeDA	10.255	715.0 -> 670.0	35763	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	10412	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	1695	20.00	µg/L	-0.013
M3-PFHxS	5.967	402.0 -> 99.0	2466	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	3452	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	1599	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	3480	20.00	µg/L	0.000
M2-8:2FTS	7.829	529.0 -> 81.0	4913	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	12281	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	815	20.00	µg/L	-0.013
M3-MeFOSA	7.527	515.0 -> 169.0	1476	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	1599	3.44	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.2%		
13C2-6:2FTS	6.634	429.0 -> 81.0	3480	3.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.8%		
13C2-8:2FTS	7.829	529.0 -> 81.0	4913	3.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.6%		
13C2-PFDoDA	8.845	615.0 -> 570.0	80277	2.97	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 14.9%		
13C2-PFTeDA	10.255	715.0 -> 670.0	35763	1.44	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 7.2%		
13C3-PFBS	3.992	302.0 -> 99.0	1695	3.33	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.7%		
13C3-PFHxS	5.967	402.0 -> 99.0	2466	3.46	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.3%		
13C4-PFBA	2.002	217.0 -> 172.0	12970	3.36	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.8%		
13C4-PFHpA	5.929	367.0 -> 322.0	31127	3.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.8%		
d5-EtFOSAA	7.748	589.0 -> 419.0	10900	3.59	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.0%		
13C5-PFHxA	5.014	318.0 -> 273.0	21041	3.12	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 15.6%		
13C5-PFPeA	3.724	268.0 -> 223.0	14587	3.20	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

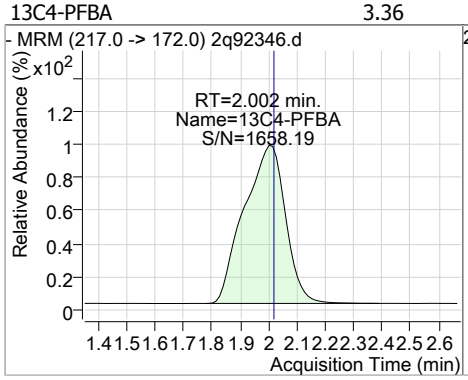
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.0%			
13C6-PFDA	7.779	519.0 -> 474.0	62065	3.41	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.0%			
13C7-PFUnDA	8.282	570.0 -> 525.0	72940	3.22	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.1%			
13C8-FOSA	7.124	506.0 -> 78.0	10412	2.83	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 14.1%			
13C8-PFOA	6.649	421.0 -> 376.0	43566	3.38	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.9%			
13C8-PFOS	7.225	507.0 -> 99.0	3452	3.33	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.6%			
13C9-PFNA	7.252	472.0 -> 427.0	48123	3.30	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.5%			
d3-MeFOSAA	7.610	573.0 -> 419.0	12281	3.20	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.0%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	815	3.13	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 15.7%			
d3-MeFOSA	7.527	515.0 -> 169.0	1476	1.05	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 5.3%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	2.008	213.0 -> 169.0	378	0.23	µg/L		100
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	5.015	313.0 -> 269.0	1255	0.32	µg/L		96
PFHxS	5.967	399.0 -> 80.0	2335	1.51	µg/L	m	99
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	-	413.0 -> 369.0	-	N.D.			
PFOS	7.225	499.0 -> 80.0	6185	4.09	µg/L	m	97
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

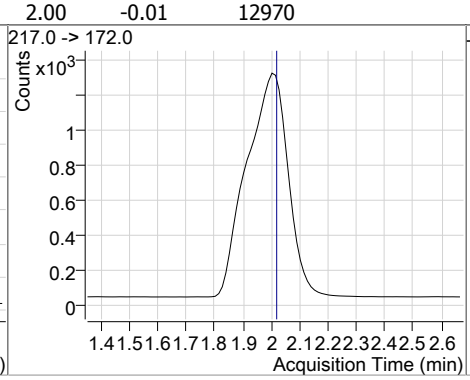
= Qualifier out of range, m = manually integrated, + = Area summed

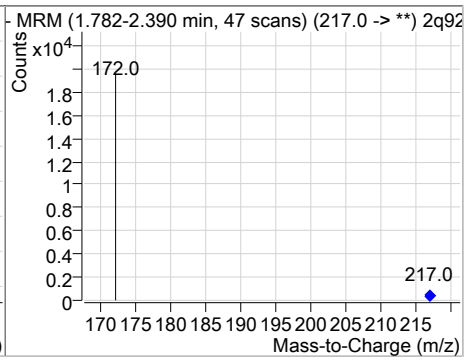
Perfluorinated Compounds by LC/MS/MS



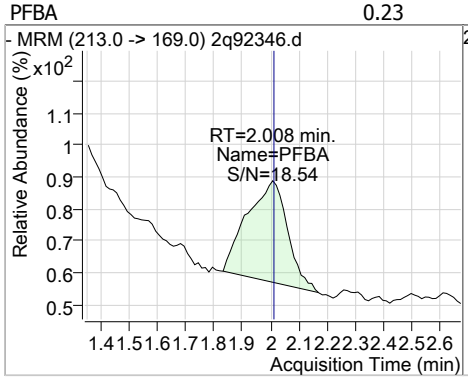
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	3.36	2.00	-0.01	12970				

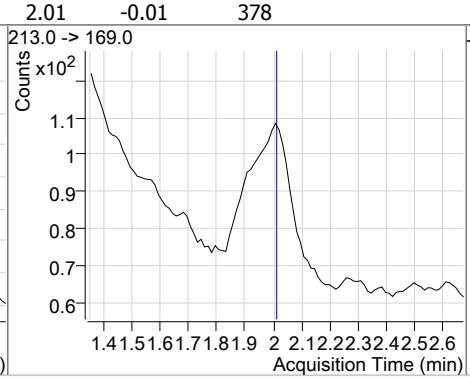


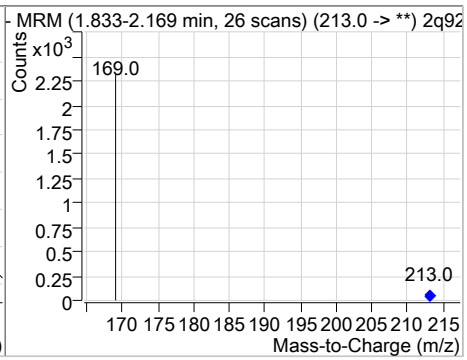




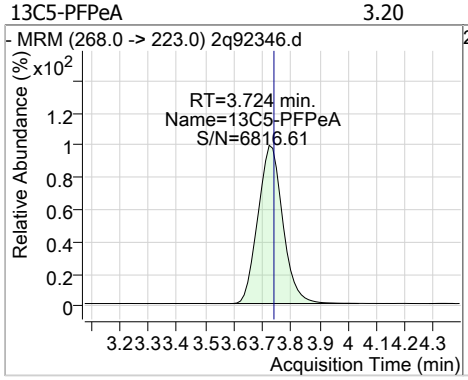
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.23	2.01	-0.01	378				

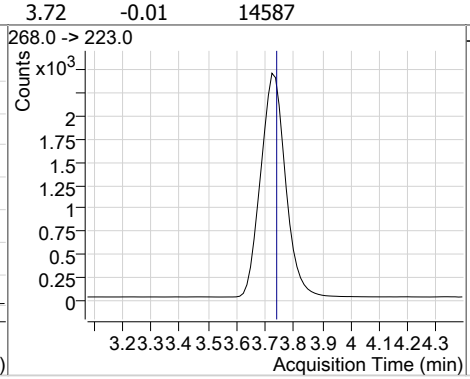


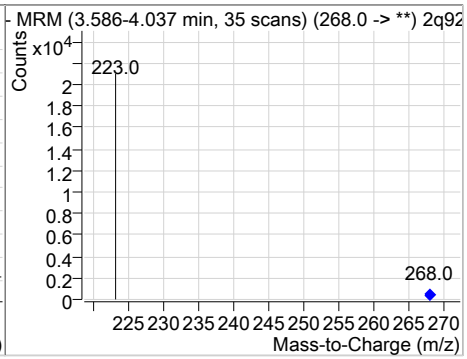




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	3.20	3.72	-0.01	14587				

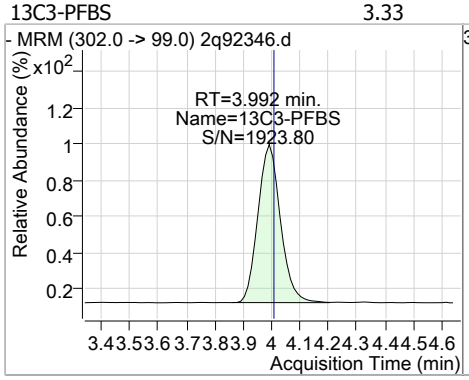


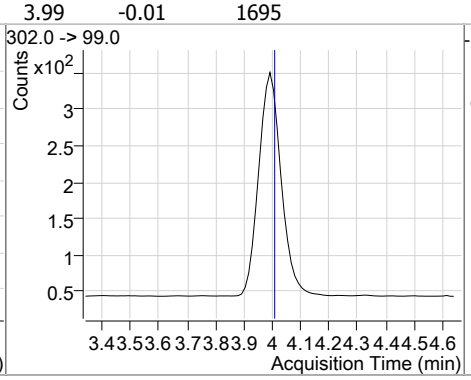


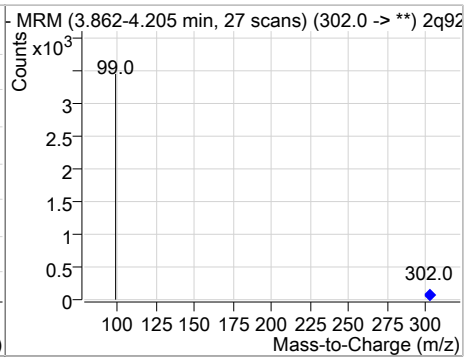


Perfluorinated Compounds by LC/MS/MS

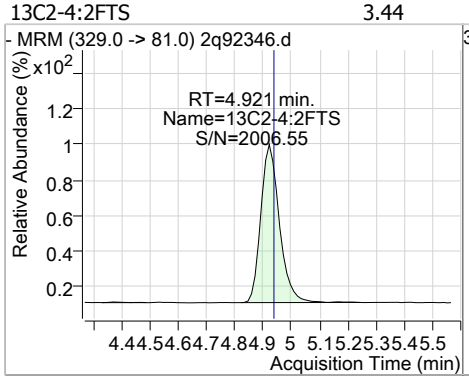
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	3.33	3.99	-0.01	1695				

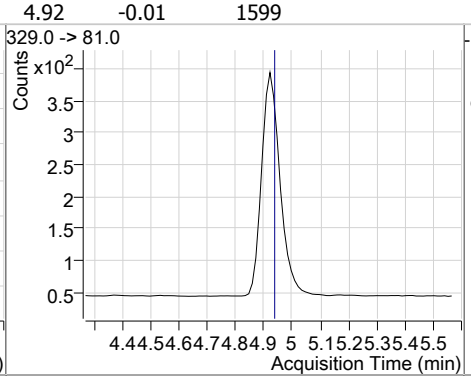


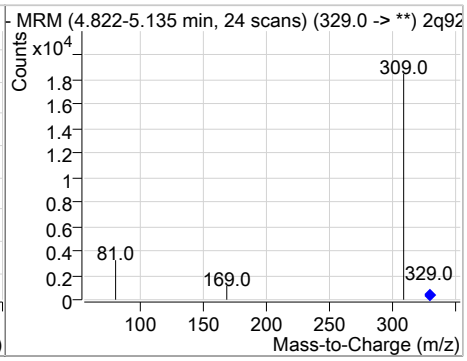




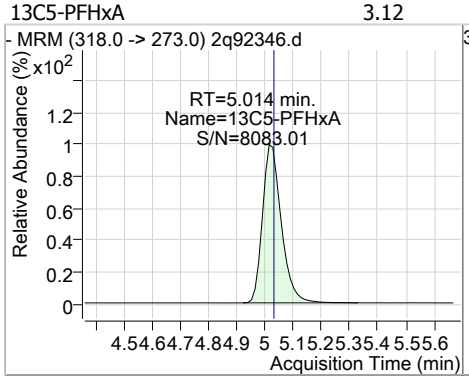
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	3.44	4.92	-0.01	1599				

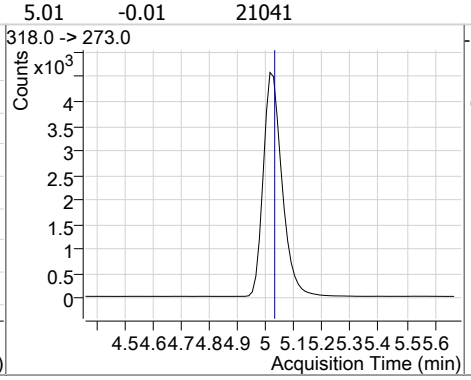


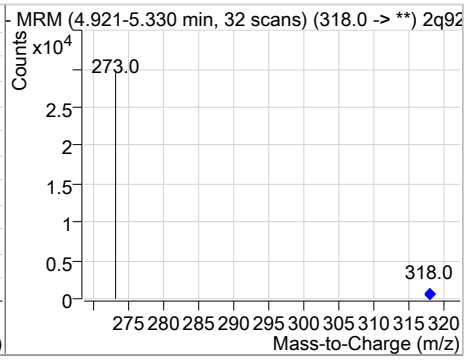




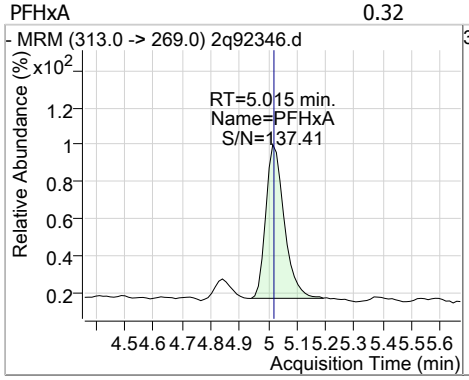
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	3.12	5.01	-0.01	21041				

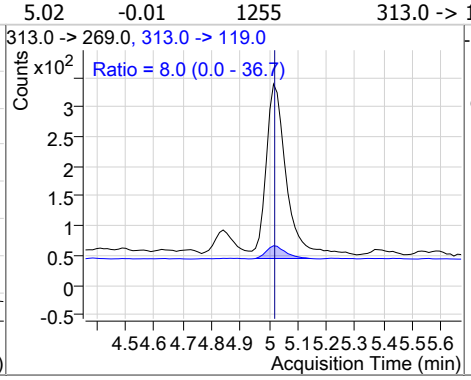


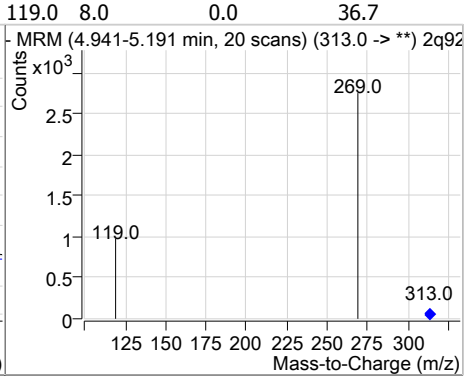




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.32	5.02	-0.01	1255	313.0 -> 119.0	8.0	0.0	36.7

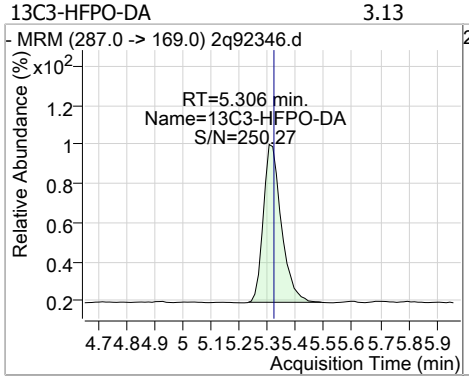


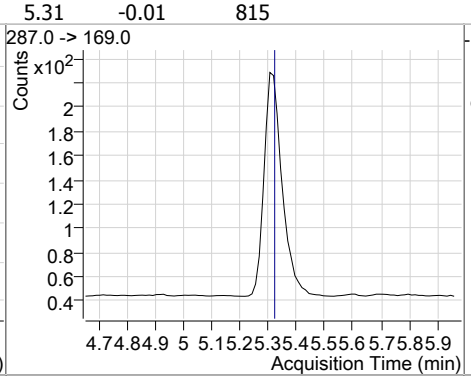


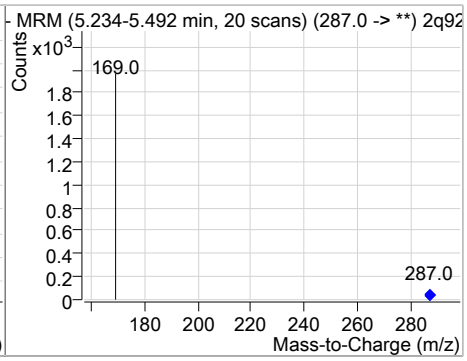


Perfluorinated Compounds by LC/MS/MS

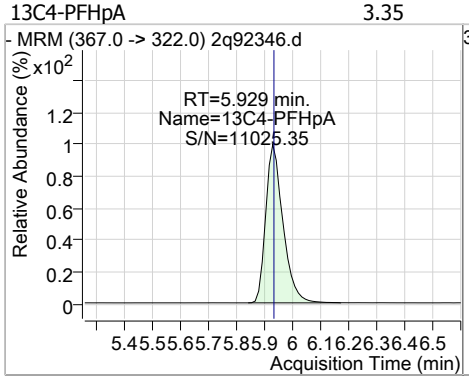
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	3.13	5.31	-0.01	815				

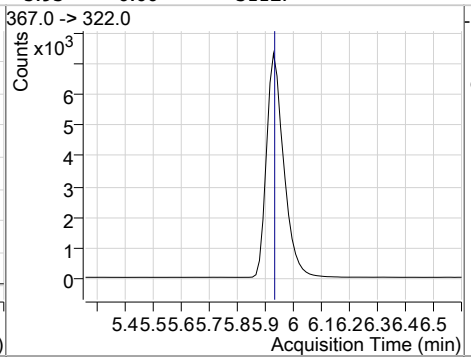


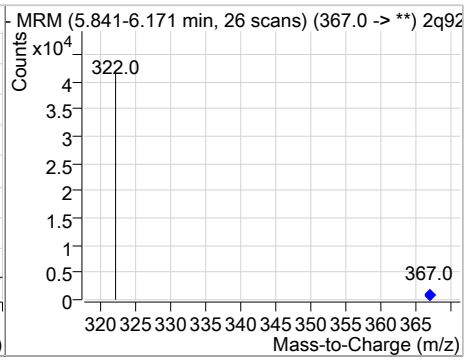




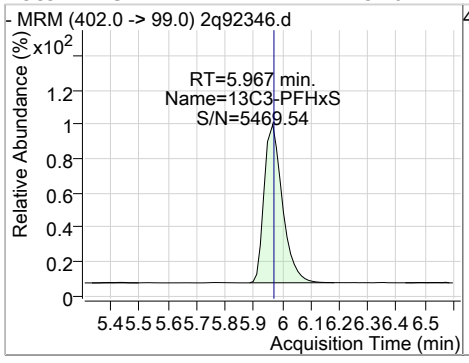
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	3.35	5.93	0.00	31127				

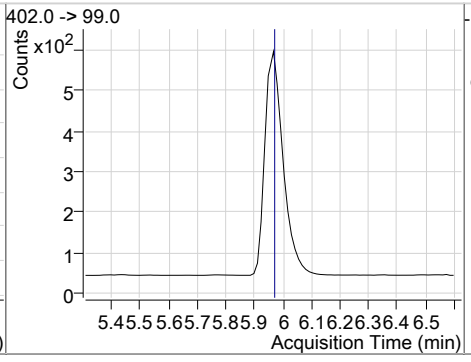


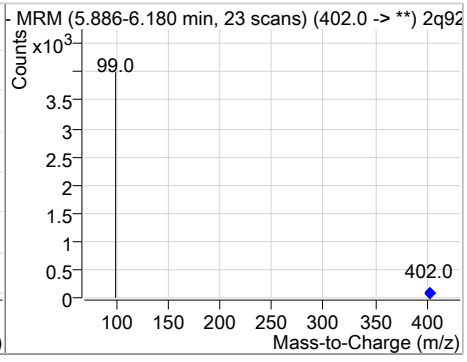




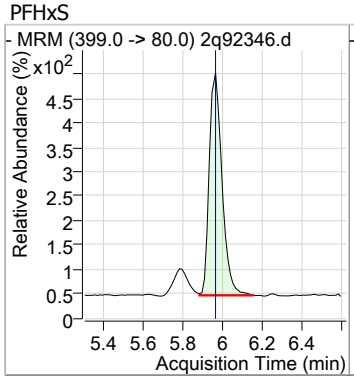
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	3.46	5.97	0.00	2466				

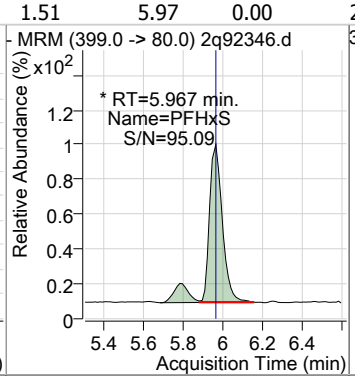


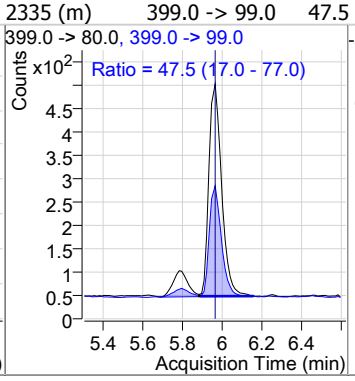


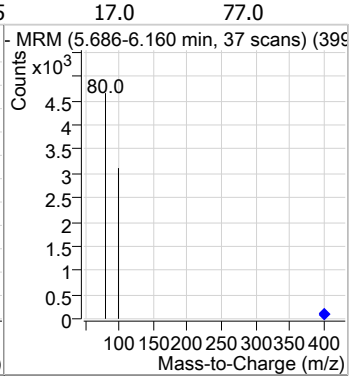


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.51	5.97	0.00	2335 (m)	399.0 -> 99.0	47.5	17.0	77.0



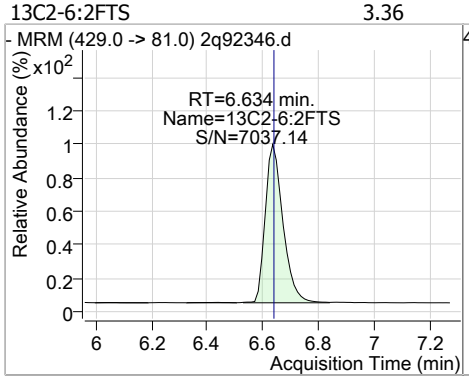


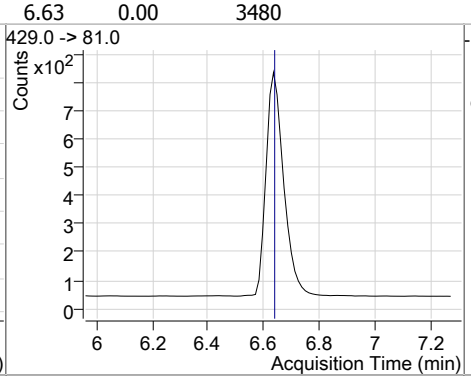


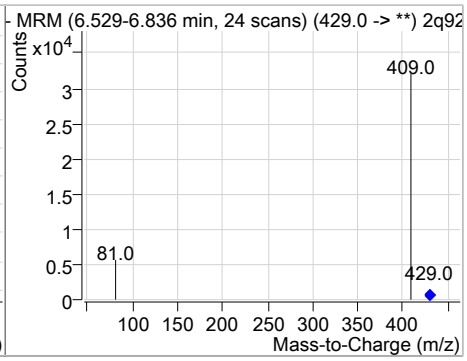


Perfluorinated Compounds by LC/MS/MS

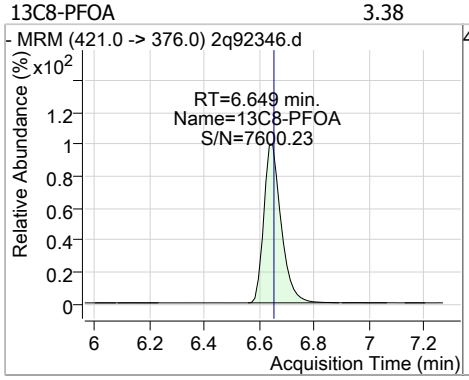
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	3.36	6.63	0.00	3480				

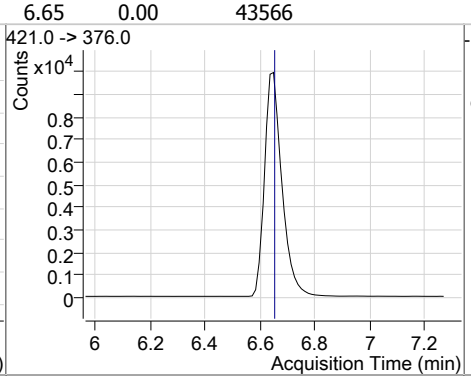


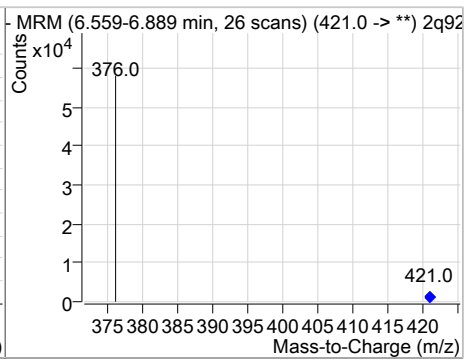




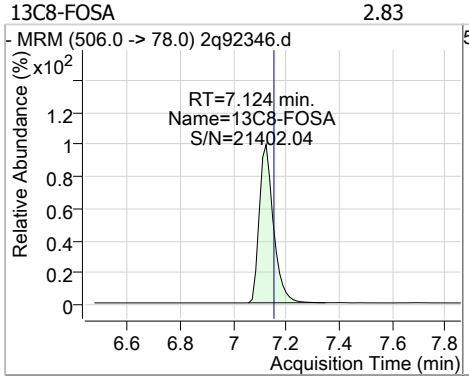
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	3.38	6.65	0.00	43566				

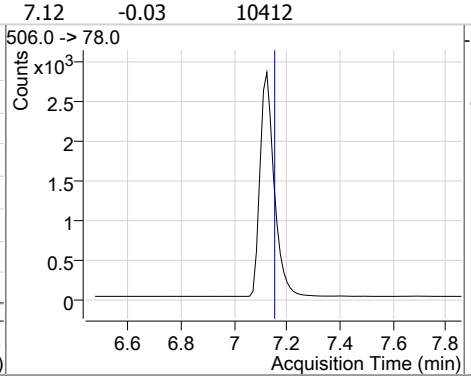


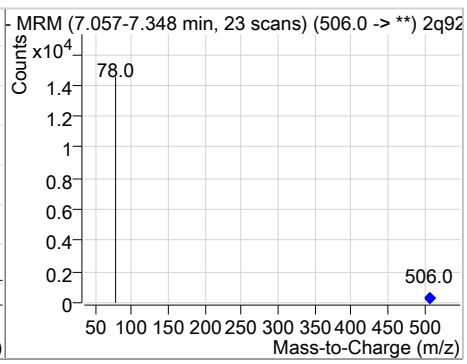




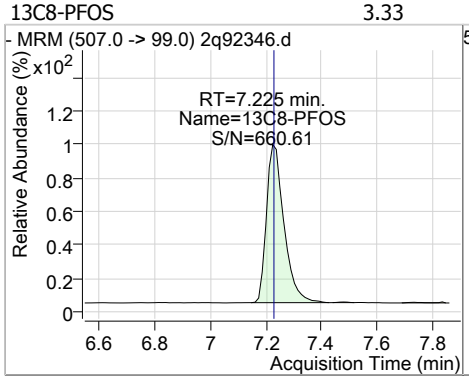
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.83	7.12	-0.03	10412				

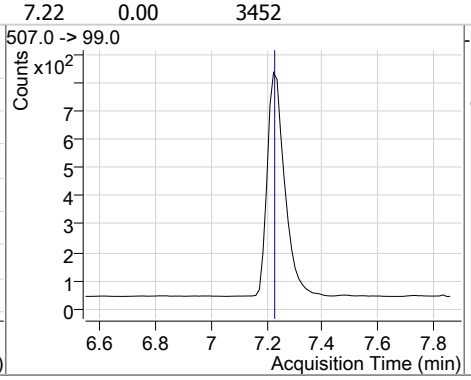


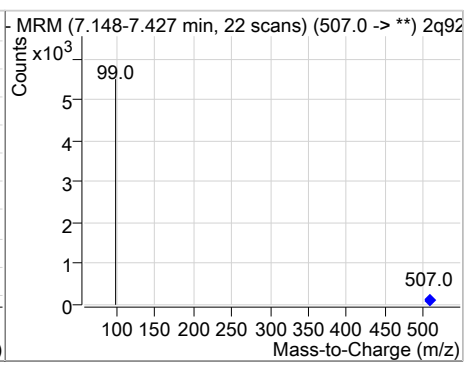




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	3.33	7.22	0.00	3452				

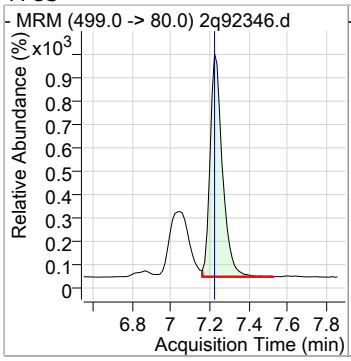


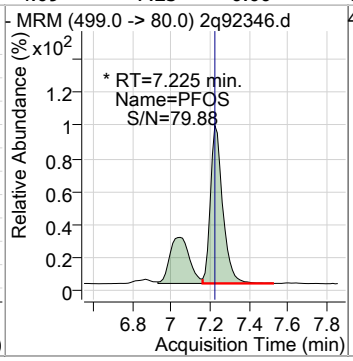


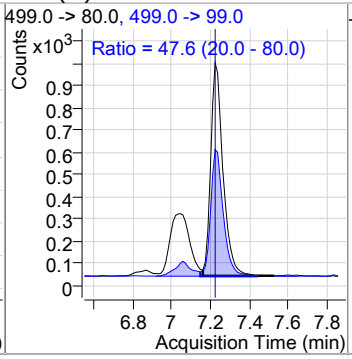


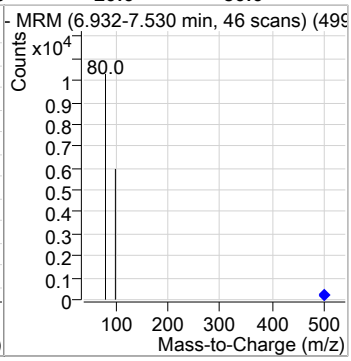
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.09	7.23	0.00	6185 (m)	499.0 -> 99.0	47.6	20.0	80.0

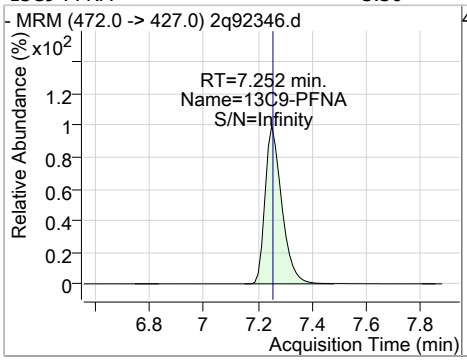


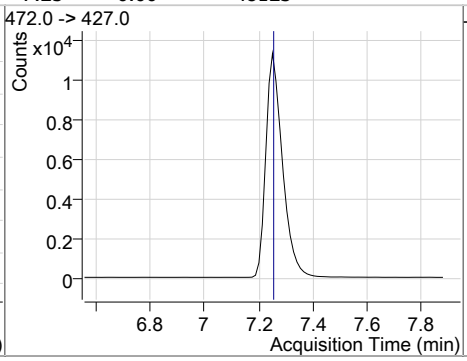


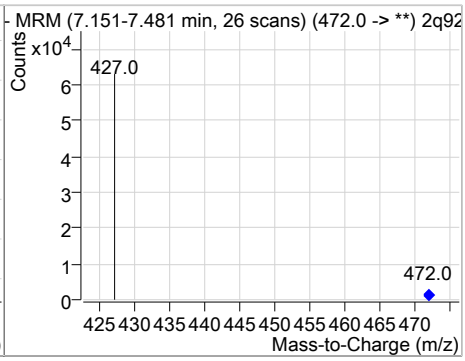




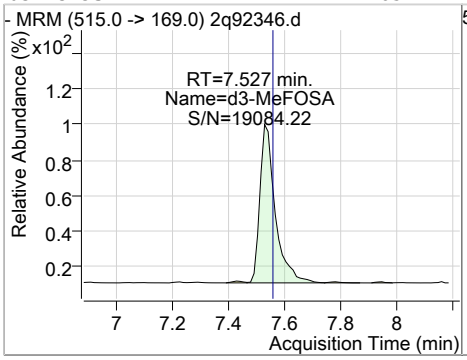
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	3.30	7.25	0.00	48123				

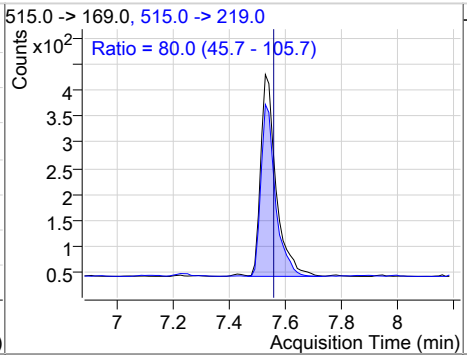


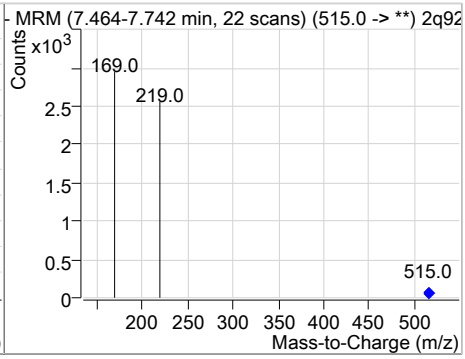




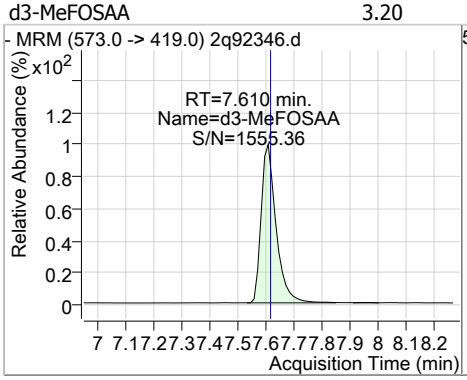
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.05	7.53	-0.03	1476	515.0 -> 219.0	80.0	45.7	105.7

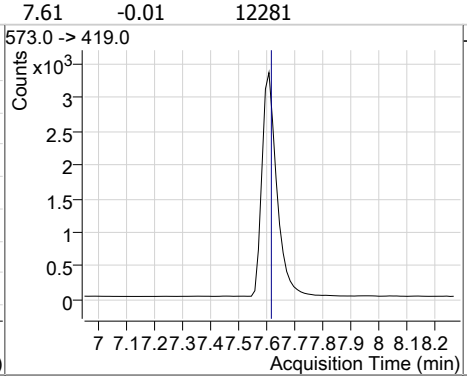


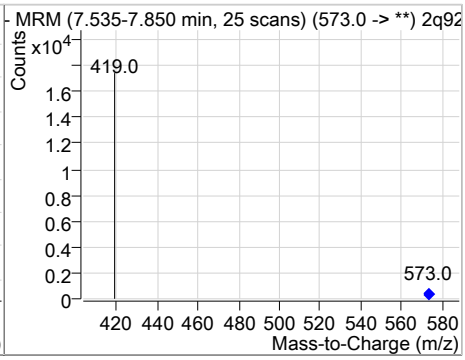




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.20	7.61	-0.01	12281				

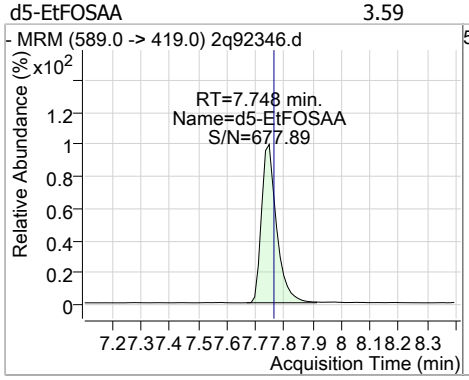


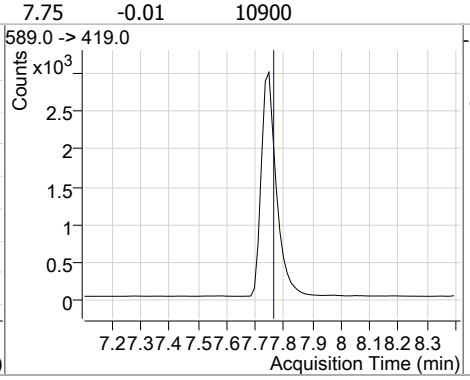


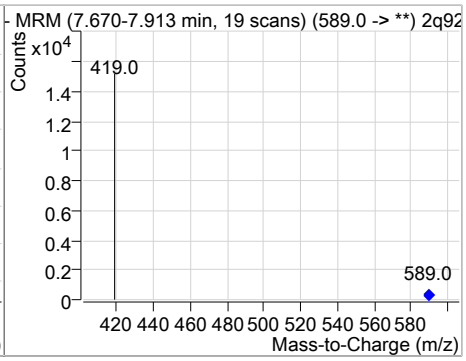


Perfluorinated Compounds by LC/MS/MS

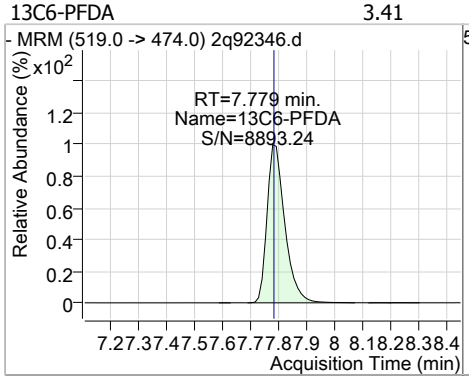
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.59	7.75	-0.01	10900				

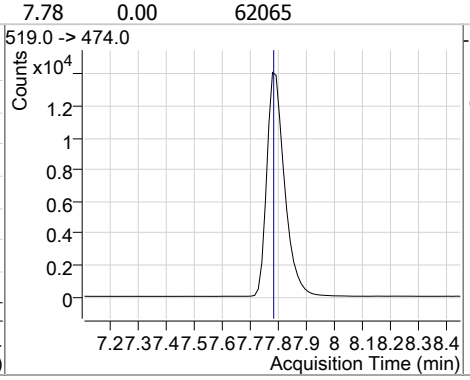


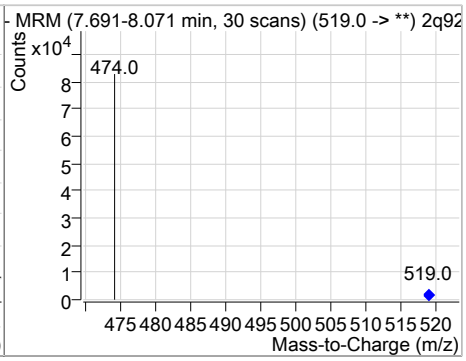




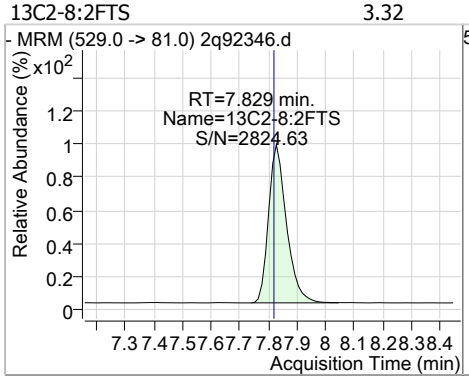
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	3.41	7.78	0.00	62065				

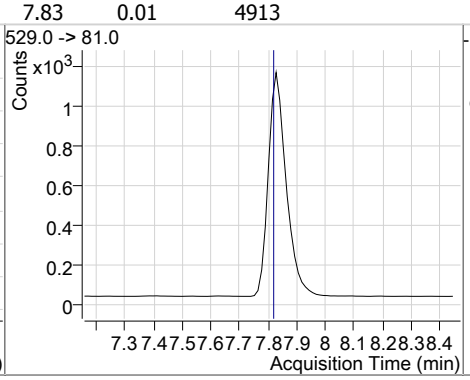


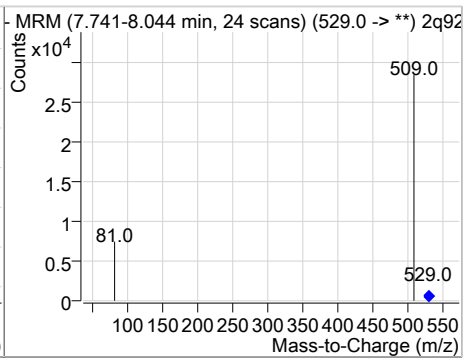




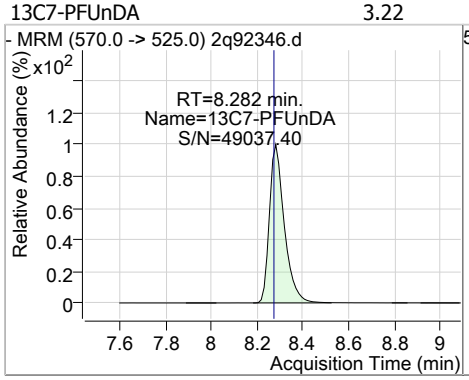
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	3.32	7.83	0.01	4913				

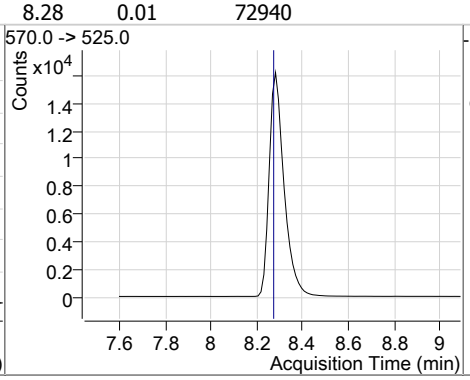


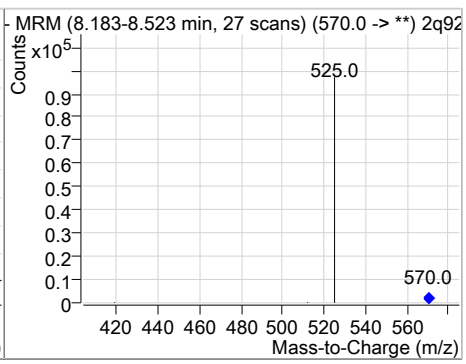




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	3.22	8.28	0.01	72940				

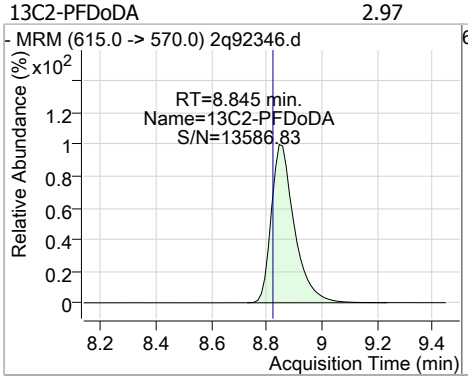


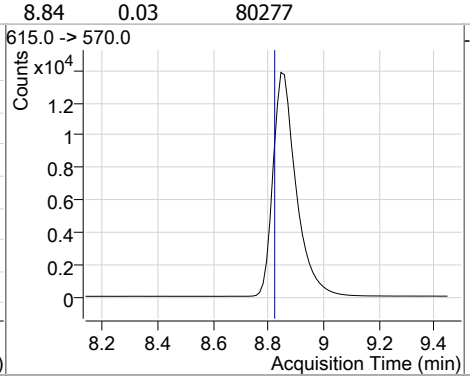


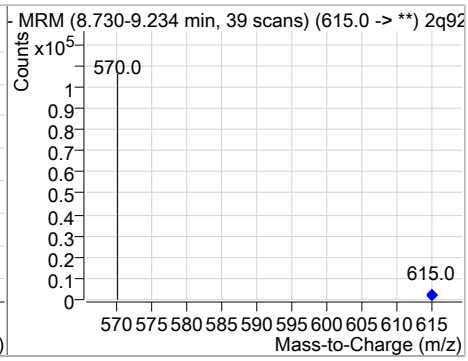


Perfluorinated Compounds by LC/MS/MS

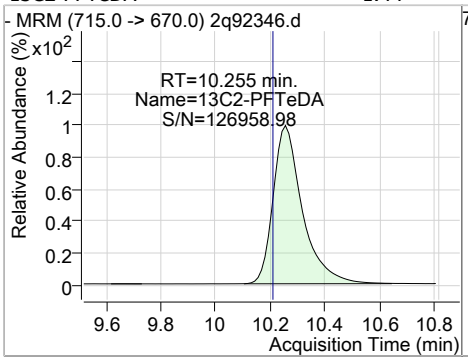
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	2.97	8.84	0.03	80277				

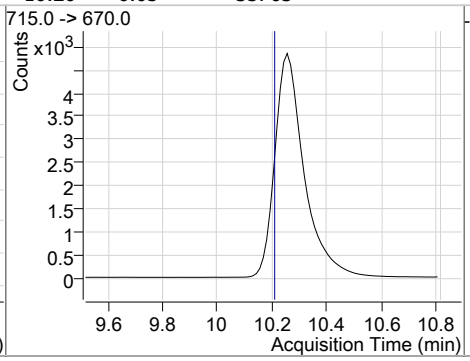


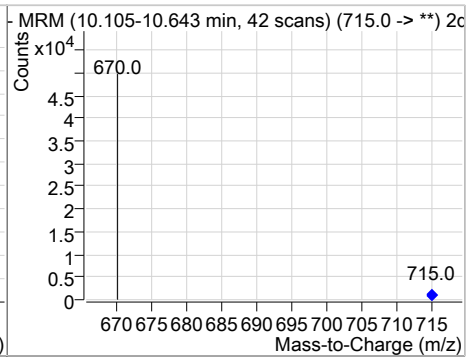




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.44	10.26	0.05	35763				







Manual Integration Approval Summary

Sample Number: FA95742-1
Lab FileID: 2Q92346.D
Injection Time: 06/03/22 13:00
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 11:45 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92326.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 9:27:50 PM
Sample Name : FA95742-2
Vial : P6-B8
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

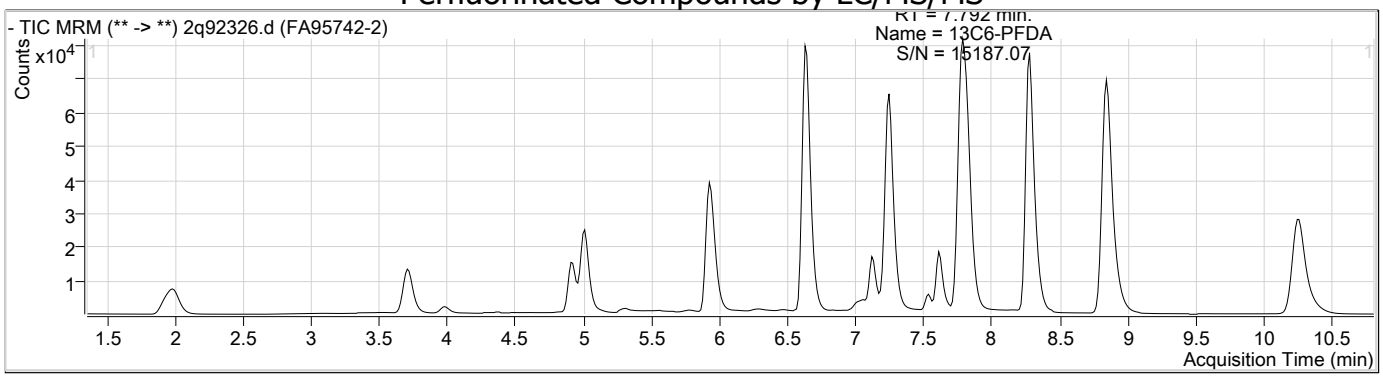
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	49255	20.00	µg/L	-0.013
M4-PFBA	1.977	217.0 -> 172.0	57088	20.00	µg/L	-0.038
M5-PFPeA	3.711	268.0 -> 223.0	62715	20.00	µg/L	-0.025
M5-PFHxA	5.014	318.0 -> 273.0	94794	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	144949	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	208496	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	230948	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	294113	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	350491	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	395313	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	207832	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	54216	20.00	µg/L	-0.025
M3-PFBS	3.979	302.0 -> 99.0	7577	20.00	µg/L	-0.025
M3-PFHxS	5.967	402.0 -> 99.0	11192	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	16895	20.00	µg/L	0.000
M2-4:2FTS	4.909	329.0 -> 81.0	6824	20.00	µg/L	-0.025
M2-6:2FTS	6.634	429.0 -> 81.0	16938	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	24251	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	59053	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	3635	20.00	µg/L	-0.013
M3-MeFOSA	7.539	515.0 -> 169.0	9292	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	6824	14.67	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.3%		
13C2-6:2FTS	6.634	429.0 -> 81.0	16938	16.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.9%		
13C2-8:2FTS	7.828	529.0 -> 81.0	24251	16.38	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.9%		
13C2-PFDoDA	8.845	615.0 -> 570.0	395313	14.63	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%		
13C2-PFTeDA	10.243	715.0 -> 670.0	207832	8.35	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 41.7%		
13C3-PFBS	3.979	302.0 -> 99.0	7577	14.90	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.5%		
13C3-PFHxS	5.967	402.0 -> 99.0	11192	15.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C4-PFBA	1.977	217.0 -> 172.0	57088	14.78	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.9%		
13C4-PFHpA	5.929	367.0 -> 322.0	144949	15.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.1%		
d5-EtFOSAA	7.748	589.0 -> 419.0	49255	16.23	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.1%		
13C5-PFHxA	5.014	318.0 -> 273.0	94794	14.04	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.2%		
13C5-PFPeA	3.711	268.0 -> 223.0	62715	13.76	µg/L	-0.025

Perfluorinated Compounds by LC/MS/MS

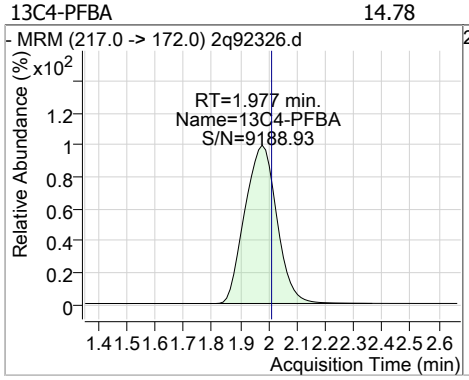
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.8%			
13C6-PFDA	7.792	519.0 -> 474.0	294113	16.15	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%			
13C7-PFUnDA	8.282	570.0 -> 525.0	350491	15.49	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%			
13C8-FOSA	7.124	506.0 -> 78.0	54216	14.73	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.7%			
13C8-PFOA	6.649	421.0 -> 376.0	208496	16.20	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%			
13C8-PFOS	7.225	507.0 -> 99.0	16895	16.28	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.4%			
13C9-PFNA	7.252	472.0 -> 427.0	230948	15.83	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.2%			
d3-MeFOSAA	7.610	573.0 -> 419.0	59053	15.40	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.0%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	3635	13.96	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.8%			
d3-MeFOSA	7.539	515.0 -> 169.0	9292	6.64	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 33.2%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.983	213.0 -> 169.0	2185	1.49	µg/L		100
PFBS	3.969	299.0 -> 80.0	1059	0.84	µg/L		96
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.930	363.0 -> 319.0	7363	0.62	µg/L		93
PFHpS	6.645	449.0 -> 80.0	955	0.73	µg/L	m	89
PFHxA	5.015	313.0 -> 269.0	8804	2.51	µg/L		100
PFHxS	5.967	399.0 -> 80.0	18675	13.30	µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.637	413.0 -> 369.0	8860	0.78	µg/L	m	92
PFOS	7.225	499.0 -> 80.0	44754	30.26	µg/L	m	96
PFPeA	3.714	263.0 -> 219.0	3447	0.71	µg/L		100
PFPeS	5.132	349.0 -> 80.0	1033	1.20	µg/L		94
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

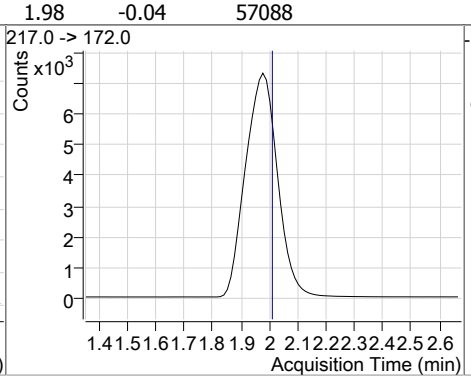
= Qualifier out of range, m = manually integrated, + = Area summed

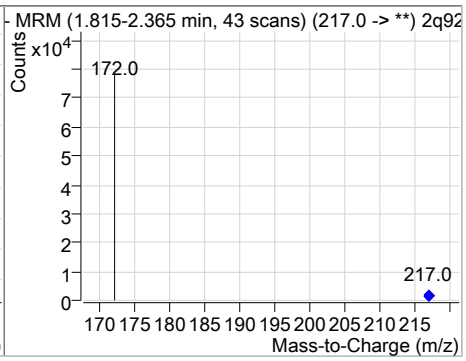
Perfluorinated Compounds by LC/MS/MS



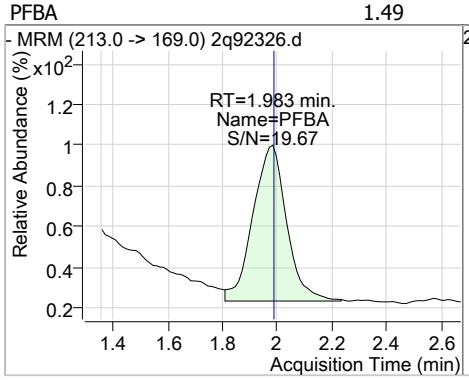
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	14.78	1.98	-0.04	57088				

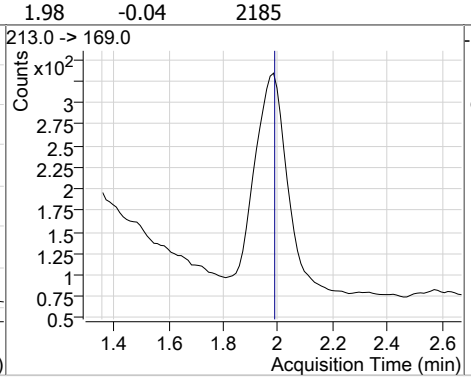


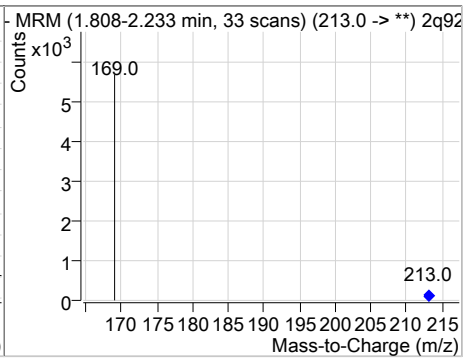




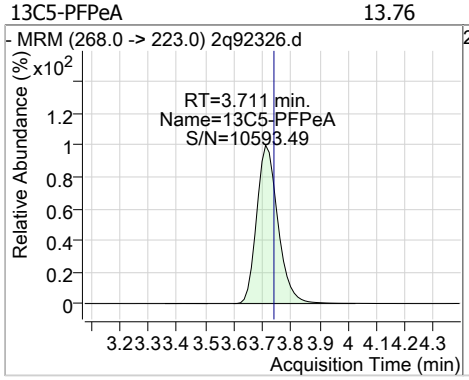
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.49	1.98	-0.04	2185				

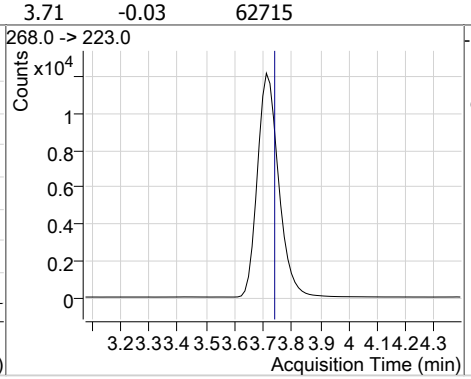


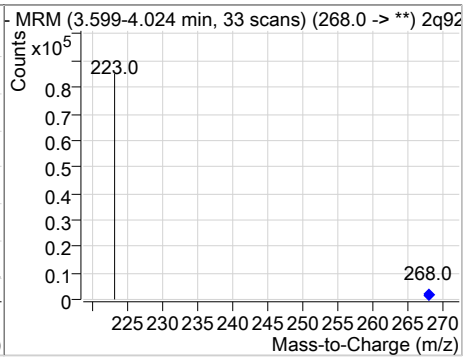




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.76	3.71	-0.03	62715				

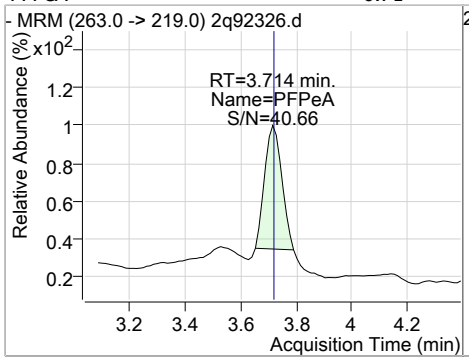


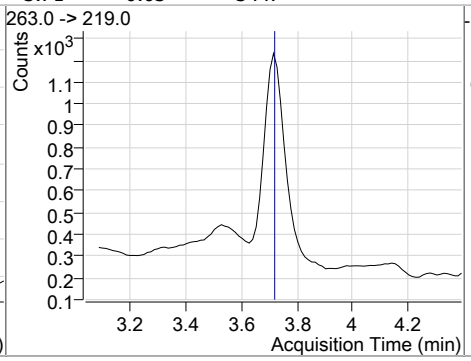


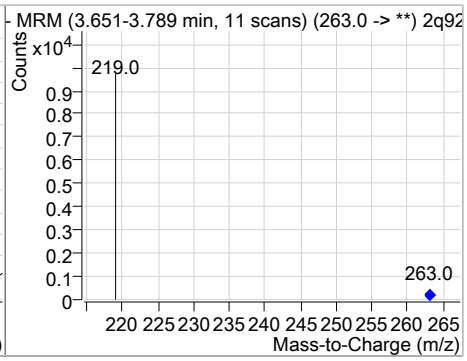


Perfluorinated Compounds by LC/MS/MS

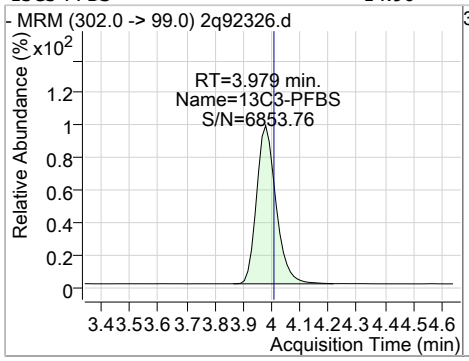
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.71	3.71	-0.03	3447				

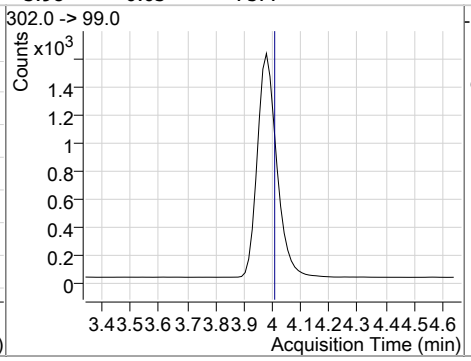


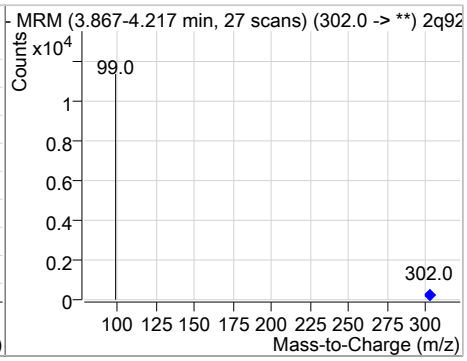




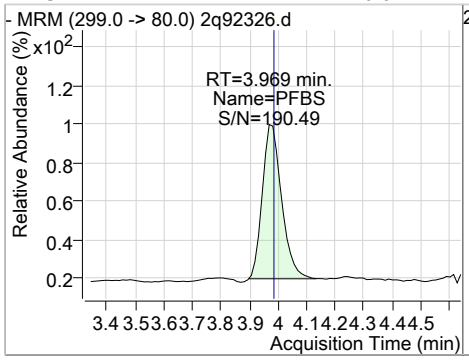
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.90	3.98	-0.03	7577				

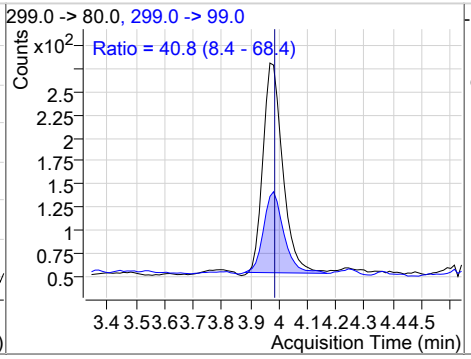


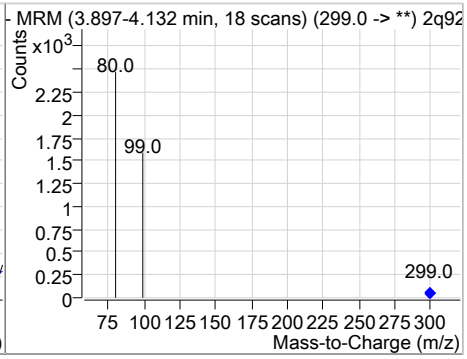




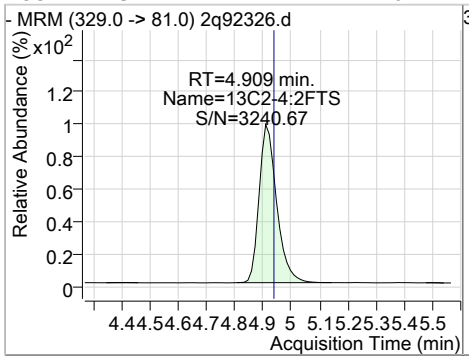
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.84	3.97	-0.04	1059	299.0 -> 99.0	40.8	8.4	68.4

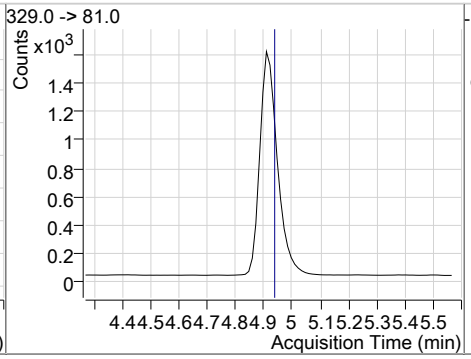


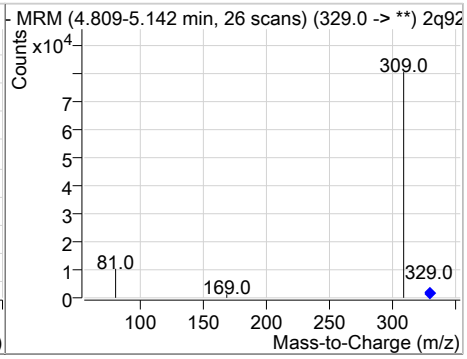




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.67	4.91	-0.03	6824				

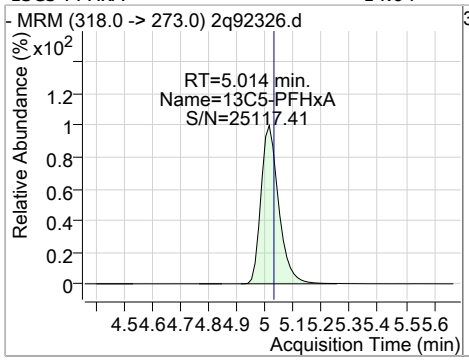


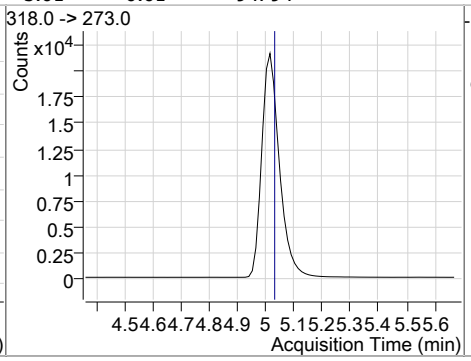


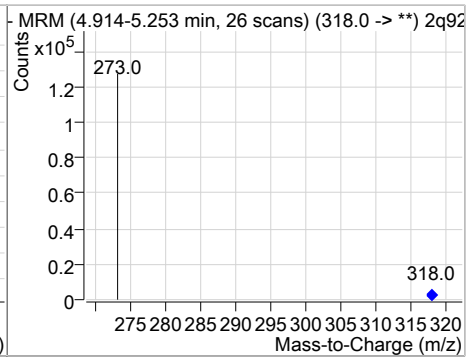


Perfluorinated Compounds by LC/MS/MS

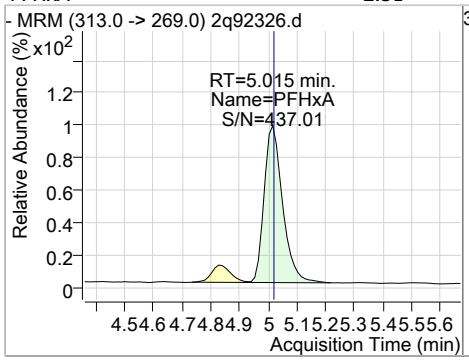
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.04	5.01	-0.01	94794				

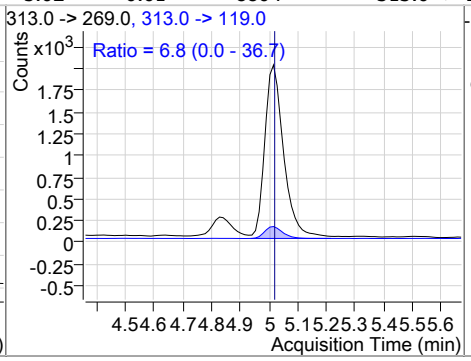


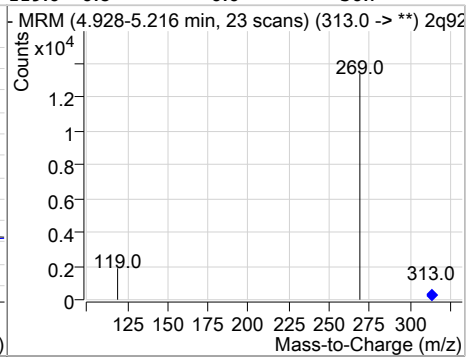




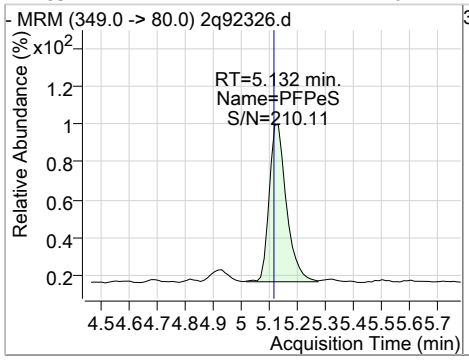
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.51	5.02	-0.01	8804	313.0 -> 119.0	6.8	0.0	36.7

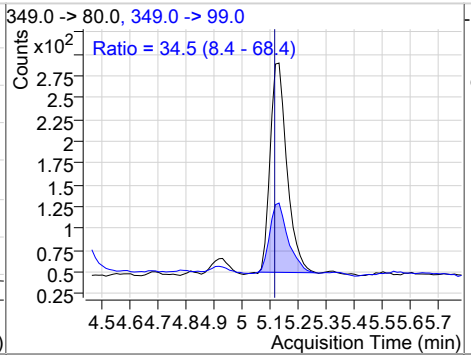


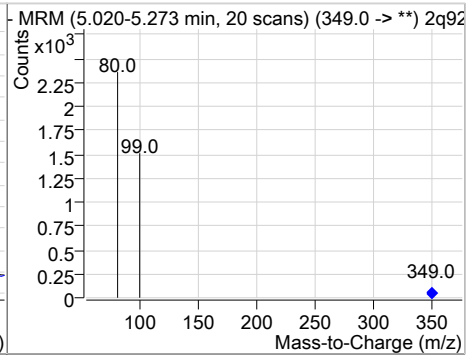




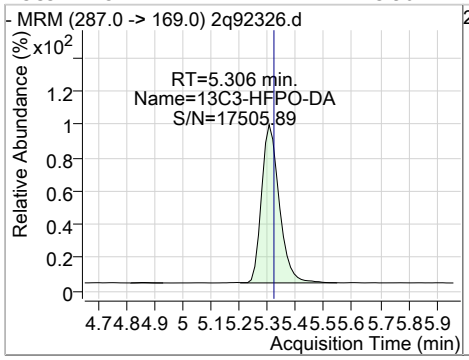
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.20	5.13	-0.01	1033	349.0 -> 99.0	34.5	8.4	68.4

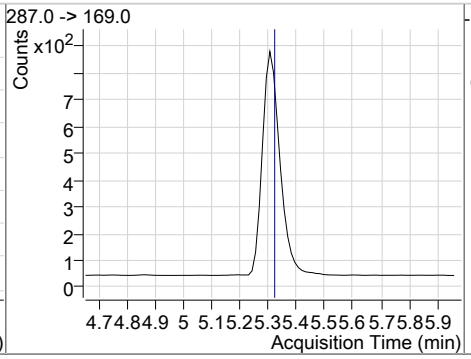


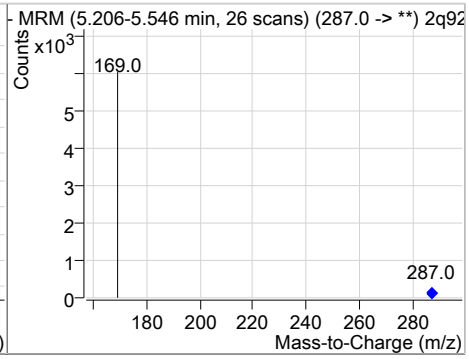




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	13.96	5.31	-0.01	3635				

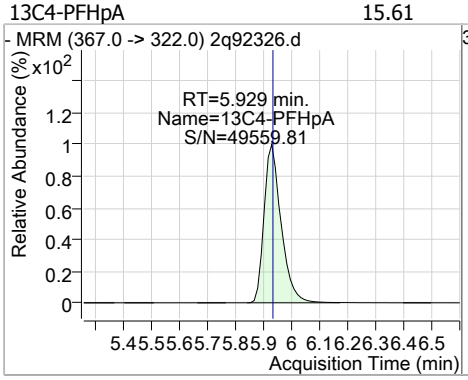


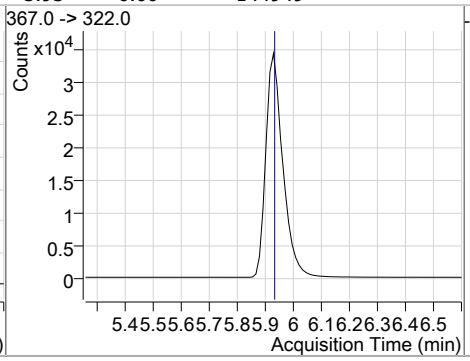


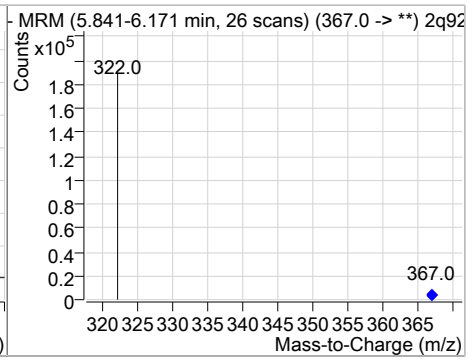


Perfluorinated Compounds by LC/MS/MS

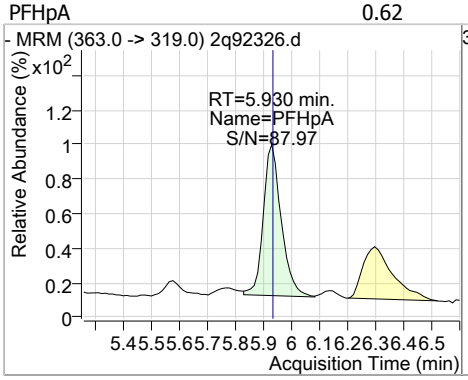
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.61	5.93	0.00	144949				

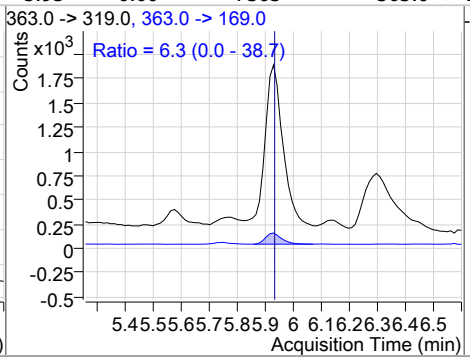


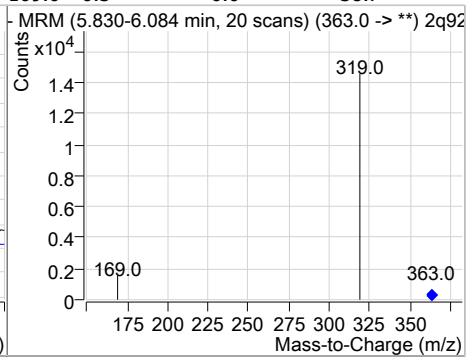




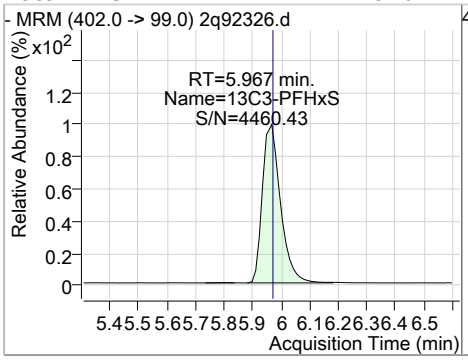
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.62	5.93	0.00	7363	363.0 -> 169.0	6.3	0.0	38.7

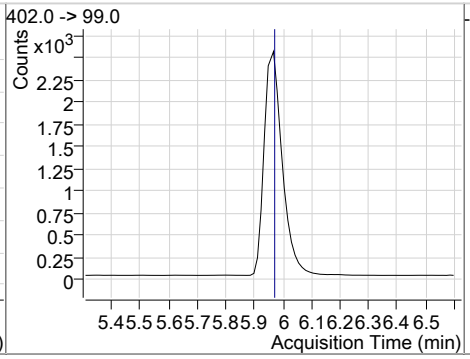


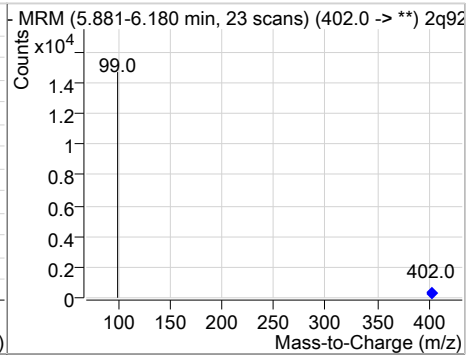




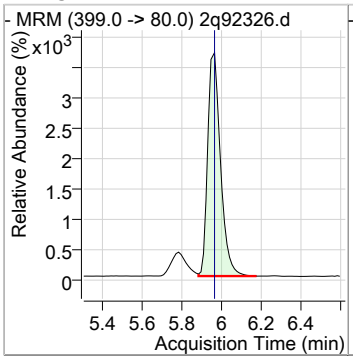
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.70	5.97	0.00	11192				

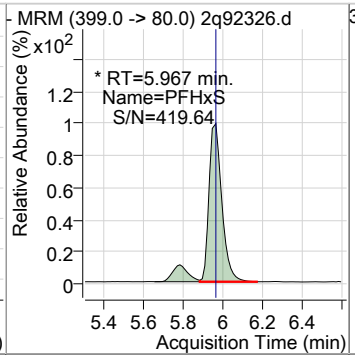


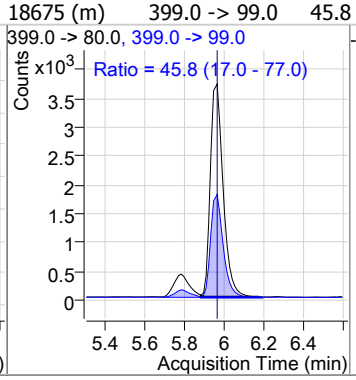


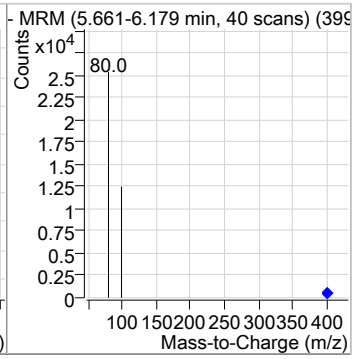


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	13.30	5.97	0.00	18675 (m)	399.0 -> 99.0	45.8	17.0	77.0



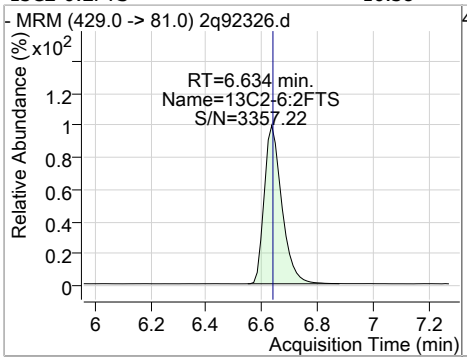


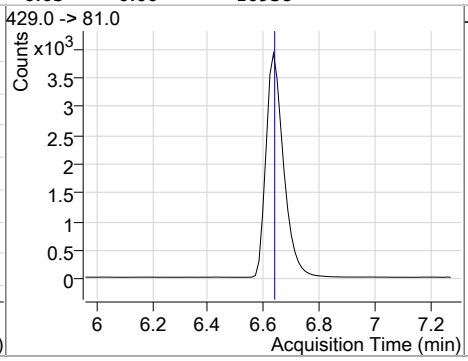


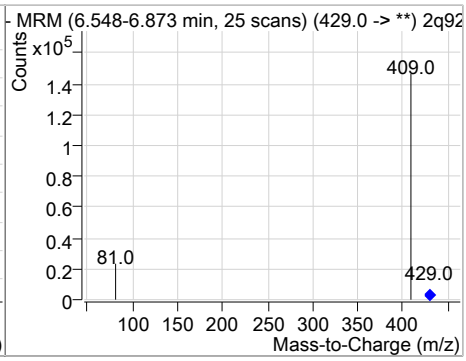


Perfluorinated Compounds by LC/MS/MS

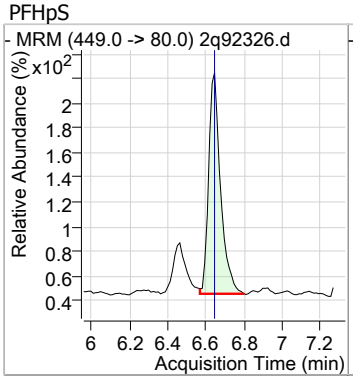
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	16.38	6.63	0.00	16938				

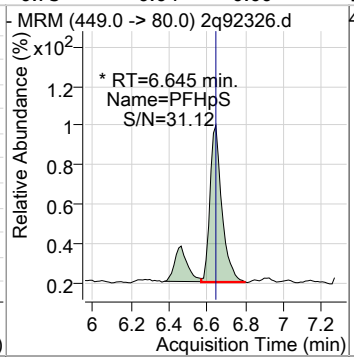


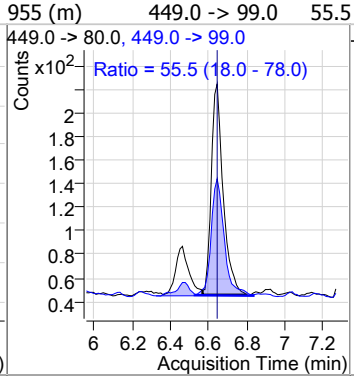


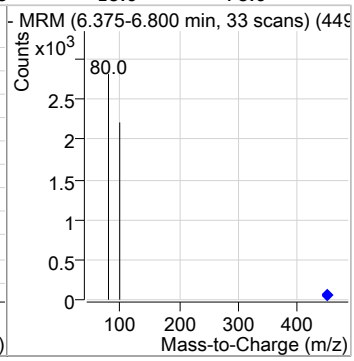


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.73	6.64	0.00	955 (m)	449.0 -> 99.0	55.5	18.0	78.0

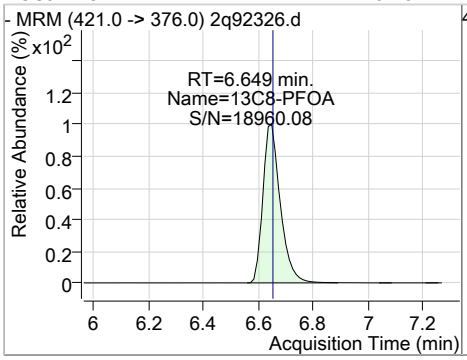


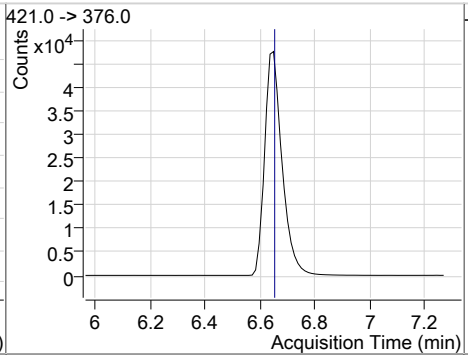


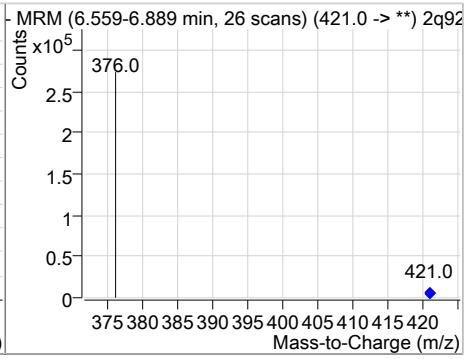




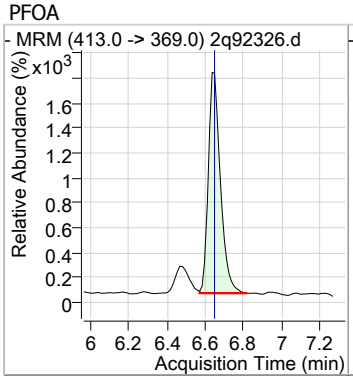
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.20	6.65	0.00	208496				

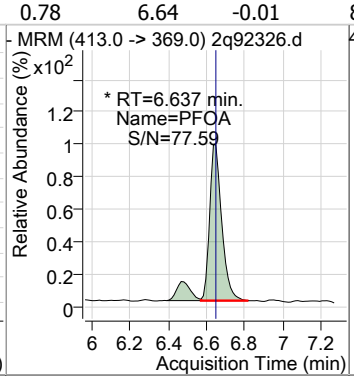


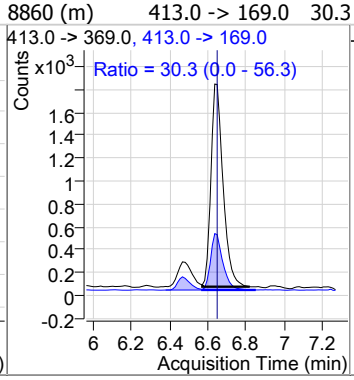


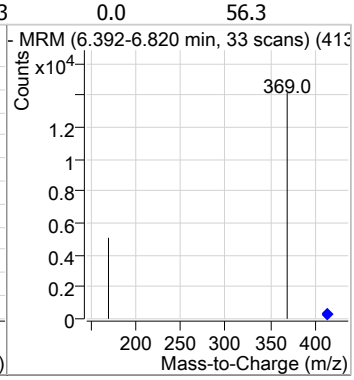


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.78	6.64	-0.01	8860 (m)	413.0 -> 169.0	30.3	0.0	56.3



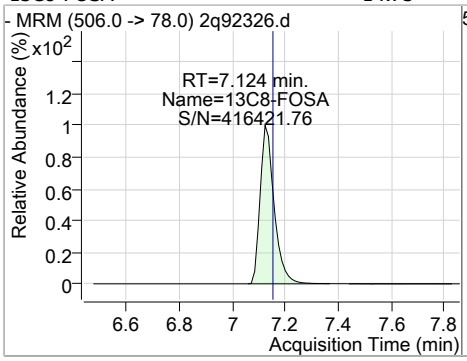


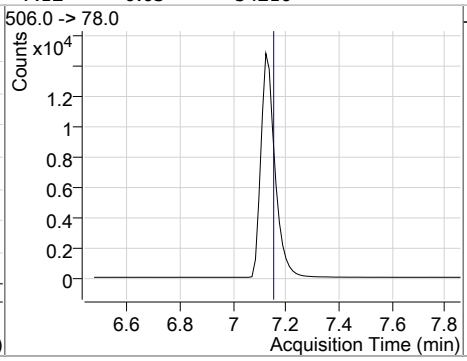


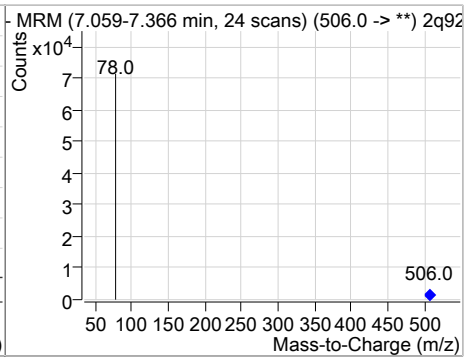


Perfluorinated Compounds by LC/MS/MS

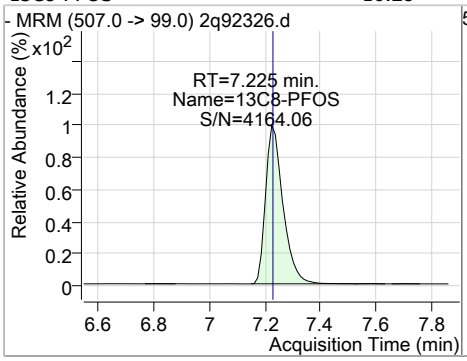
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.73	7.12	-0.03	54216				

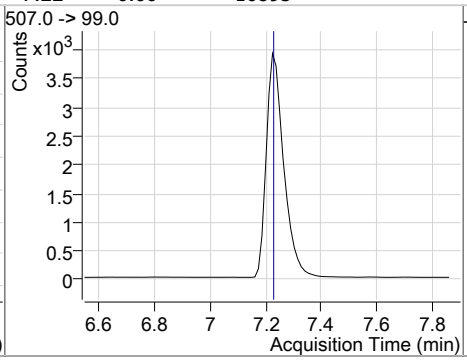


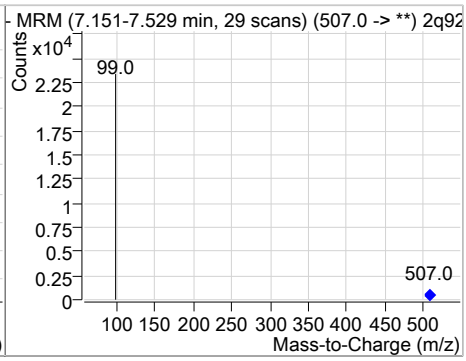




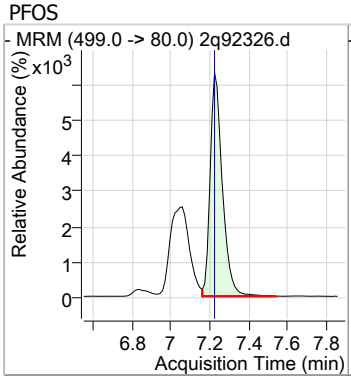
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.28	7.22	0.00	16895				

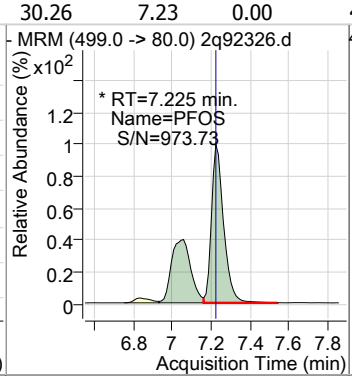


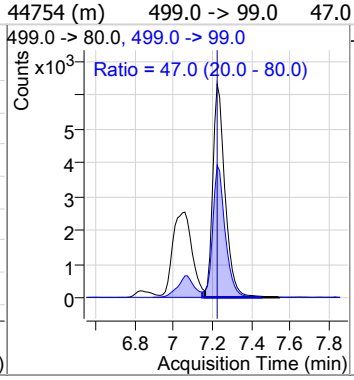


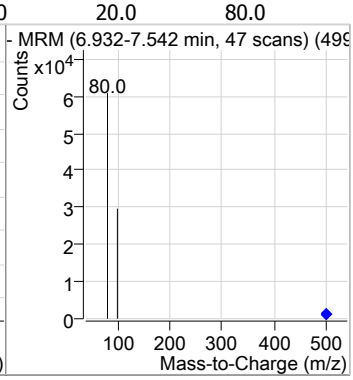


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	30.26	7.23	0.00	44754 (m)	499.0 -> 99.0	47.0	20.0	80.0

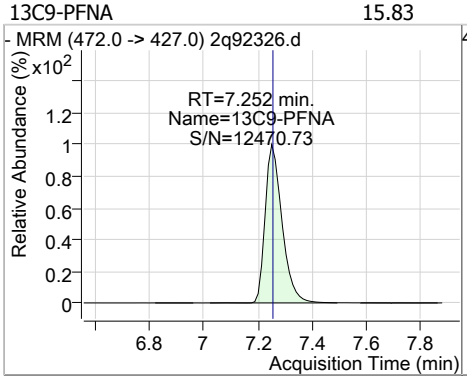


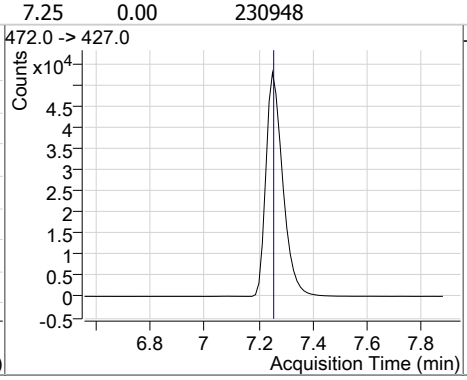


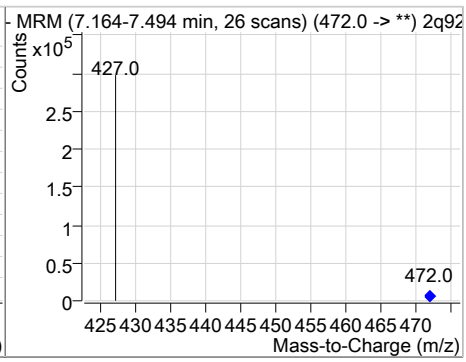




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	15.83	7.25	0.00	230948				

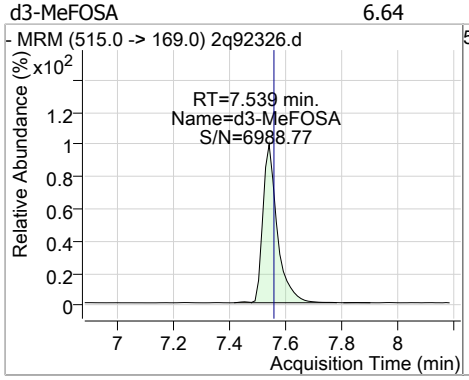


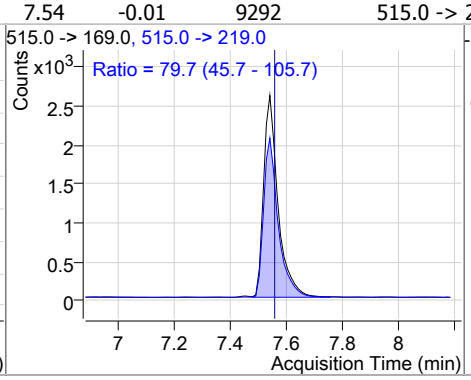


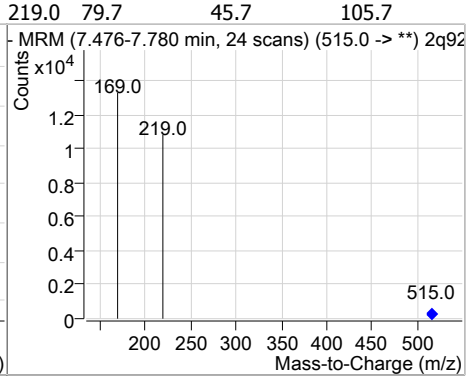


Perfluorinated Compounds by LC/MS/MS

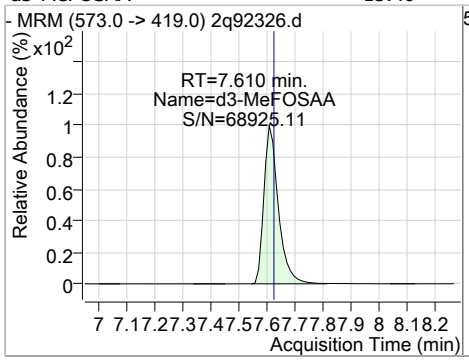
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	6.64	7.54	-0.01	9292	515.0 -> 219.0	79.7	45.7	105.7

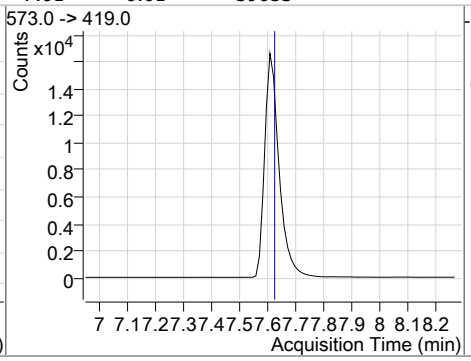


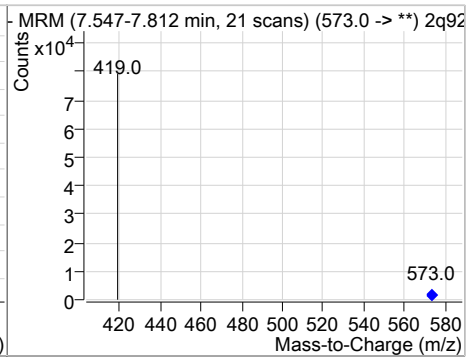




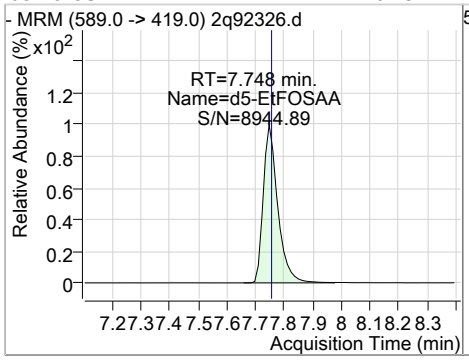
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.40	7.61	-0.01	59053				

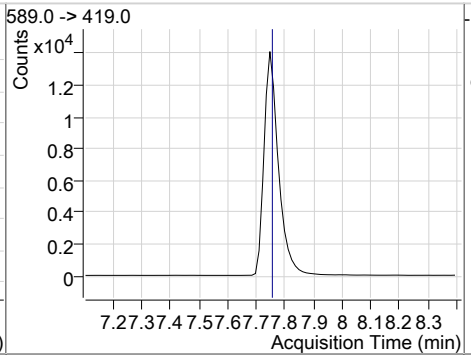


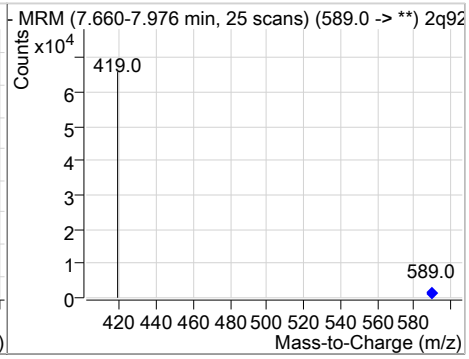




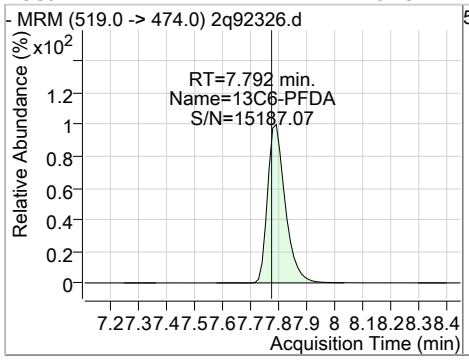
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	16.23	7.75	-0.01	49255				

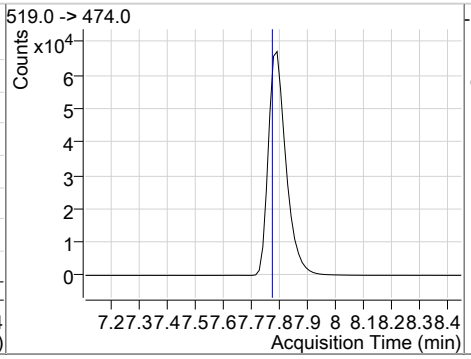


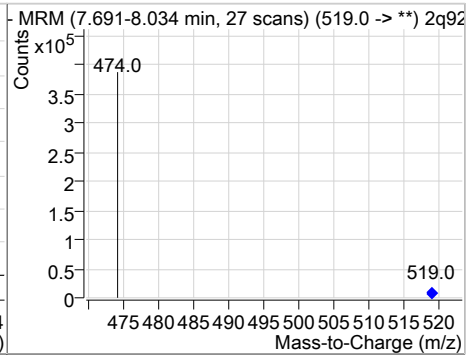




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.15	7.79	0.01	294113				

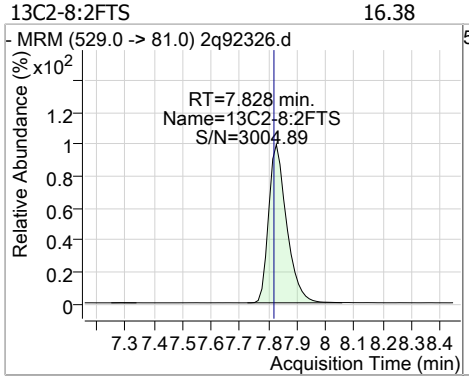


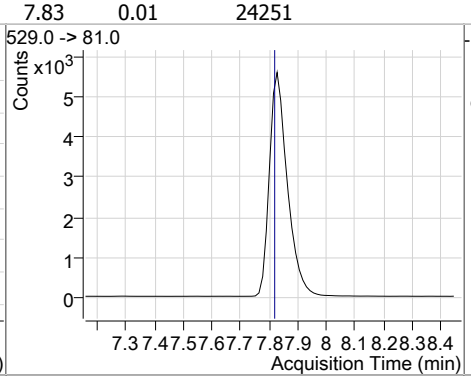


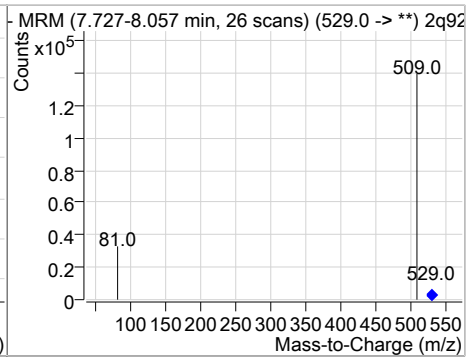


Perfluorinated Compounds by LC/MS/MS

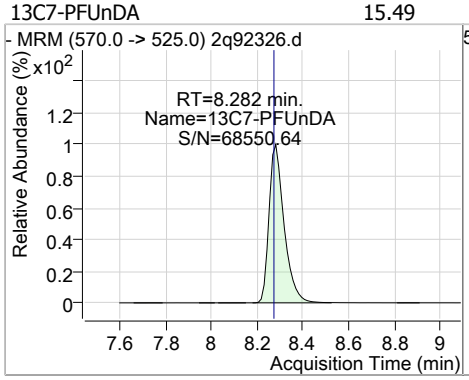
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.38	7.83	0.01	24251				

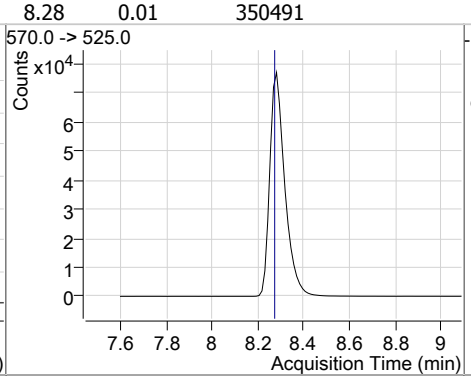


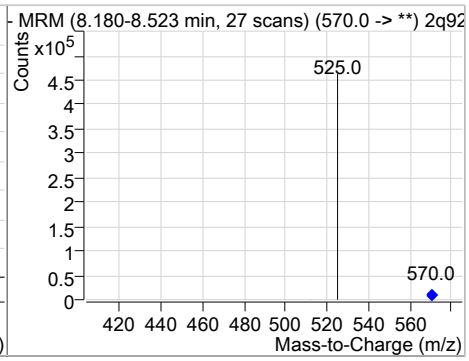




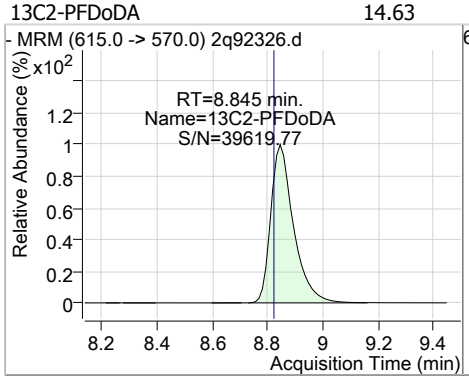
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.49	8.28	0.01	350491				

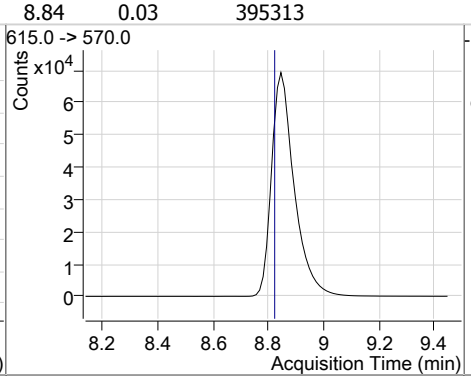


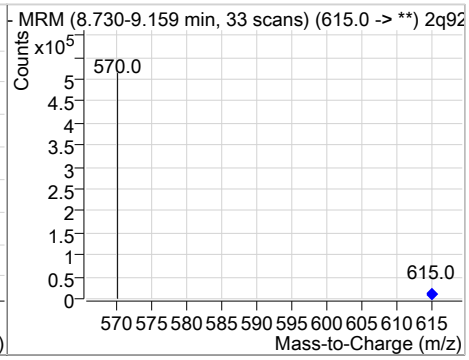




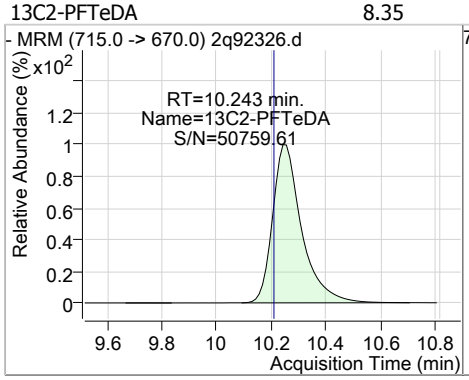
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.63	8.84	0.03	395313				

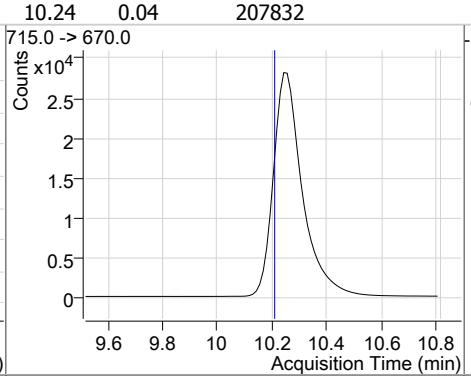


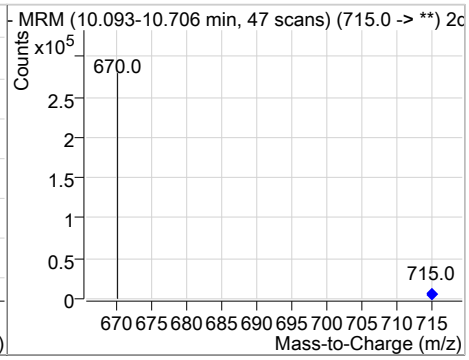




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	8.35	10.24	0.04	207832				







Manual Integration Approval Summary

Sample Number: FA95742-2
Lab FileID: 2Q92326.D
Injection Time: 06/02/22 21:27
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 11:47 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanoic acid	335-67-1		6.64	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.64	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92348.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 1:38:14 PM
Sample Name : FA95742-2
Vial : P1-C6
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91428,S2Q1294,125,,,1.0,5,water

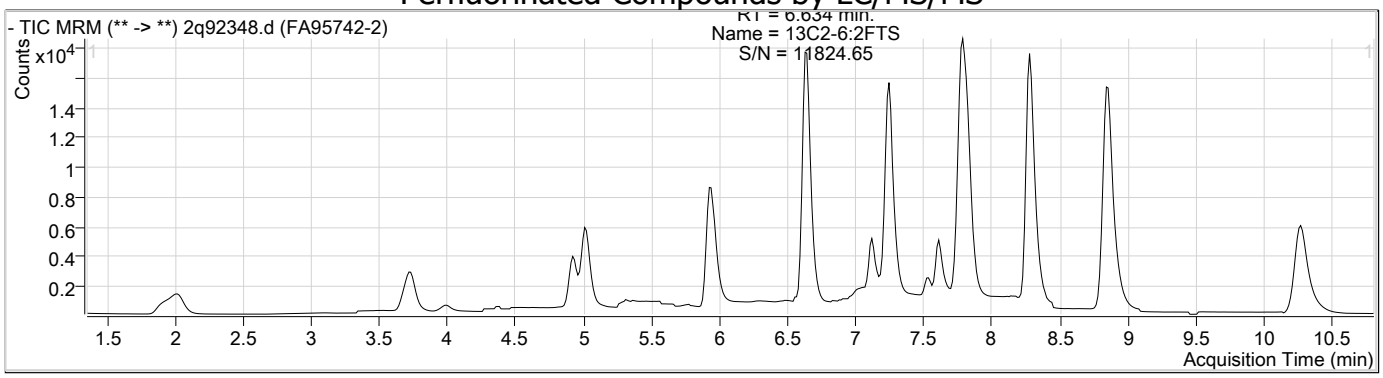
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	11087	20.00	µg/L	-0.013
M4-PFBA	2.014	217.0 -> 172.0	13434	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	14898	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	21681	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	31521	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	44793	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	49512	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	63808	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	76052	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	86129	20.00	µg/L	0.027
M2-PFTeDA	10.268	715.0 -> 670.0	43808	20.00	µg/L	0.063
M8-FOSA	7.124	506.0 -> 78.0	12382	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	1828	20.00	µg/L	-0.013
M3-PFHxS	5.967	402.0 -> 99.0	2585	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	3937	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	1639	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	3580	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	5139	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	12339	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	936	20.00	µg/L	-0.013
M3-MeFOSA	7.527	515.0 -> 169.0	2376	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	1639	3.52	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.6%		
13C2-6:2FTS	6.634	429.0 -> 81.0	3580	3.46	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.3%		
13C2-8:2FTS	7.828	529.0 -> 81.0	5139	3.47	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.4%		
13C2-PFDoDA	8.845	615.0 -> 570.0	86129	3.19	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 15.9%		
13C2-PFTeDA	10.268	715.0 -> 670.0	43808	1.76	µg/L	0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 8.8%		
13C3-PFBS	3.992	302.0 -> 99.0	1828	3.59	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.0%		
13C3-PFHxS	5.967	402.0 -> 99.0	2585	3.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.1%		
13C4-PFBA	2.014	217.0 -> 172.0	13434	3.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.4%		
13C4-PFHpA	5.929	367.0 -> 322.0	31521	3.39	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.0%		
d5-EtFOSAA	7.748	589.0 -> 419.0	11087	3.65	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.3%		
13C5-PFHxA	5.014	318.0 -> 273.0	21681	3.21	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.1%		
13C5-PFPeA	3.724	268.0 -> 223.0	14898	3.27	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

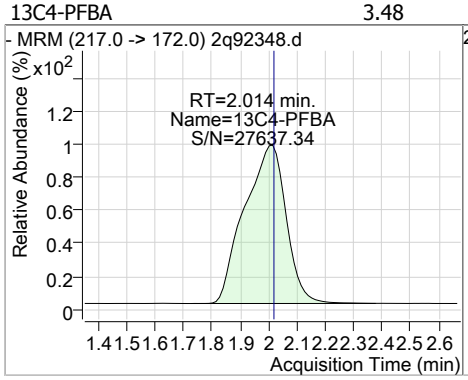
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.3%			
13C6-PFDA	7.792	519.0 -> 474.0	63808	3.50	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.5%			
13C7-PFUnDA	8.282	570.0 -> 525.0	76052	3.36	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.8%			
13C8-FOSA	7.124	506.0 -> 78.0	12382	3.36	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.8%			
13C8-PFOA	6.649	421.0 -> 376.0	44793	3.48	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.4%			
13C8-PFOS	7.225	507.0 -> 99.0	3937	3.79	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 19.0%			
13C9-PFNA	7.252	472.0 -> 427.0	49512	3.39	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.0%			
d3-MeFOSAA	7.610	573.0 -> 419.0	12339	3.22	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.1%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	936	3.59	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.0%			
d3-MeFOSA	7.527	515.0 -> 169.0	2376	1.70	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 8.5%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	2.008	213.0 -> 169.0	370	0.21	µg/L		100
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	5.015	313.0 -> 269.0	1971	0.49	µg/L		94
PFHxS	5.967	399.0 -> 80.0	4345	2.68	µg/L	m	94
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	-	413.0 -> 369.0	-	N.D.			
PFOS	7.225	499.0 -> 80.0	9899	5.74	µg/L	m	94
PFPeA	3.739	263.0 -> 219.0	1234	0.22	µg/L		100
PFPeS	5.132	349.0 -> 80.0	240	0.23	µg/L		91
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

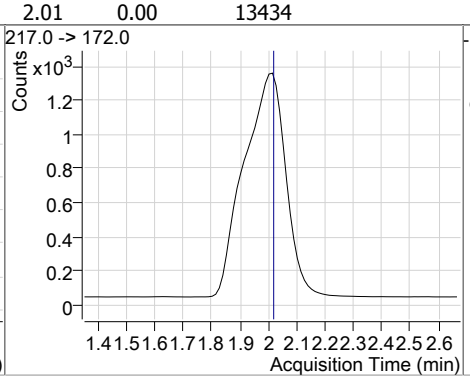
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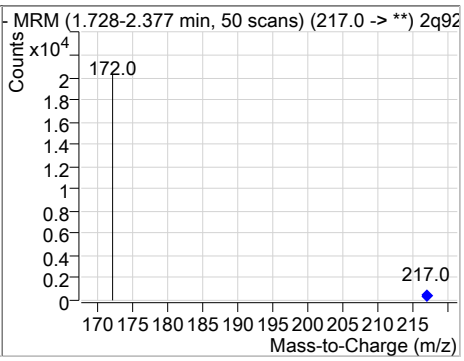
Perfluorinated Compounds by LC/MS/MS



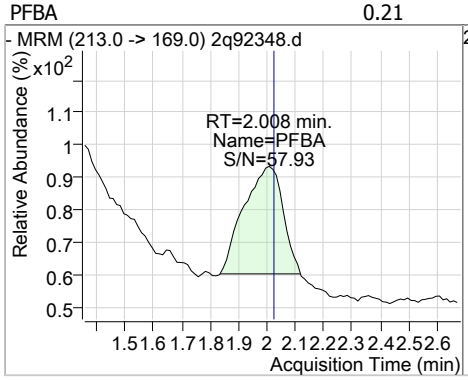
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	3.48	2.01	0.00	13434				

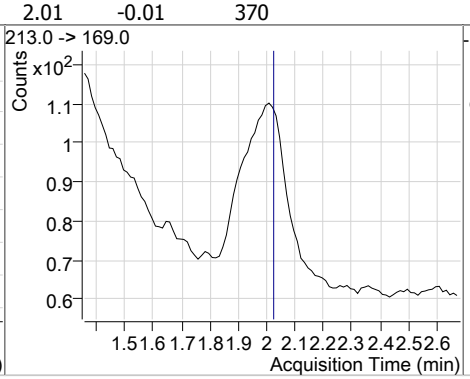


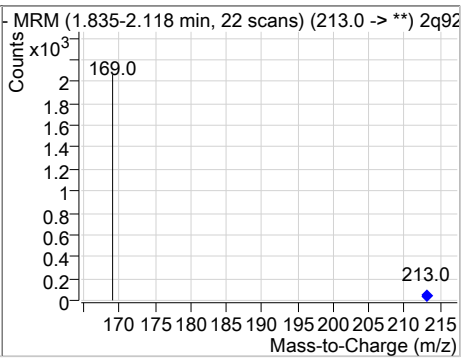




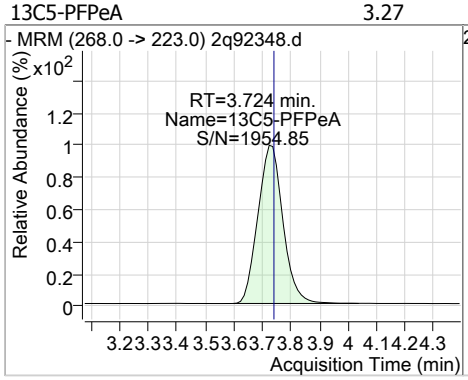
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.21	2.01	-0.01	370				

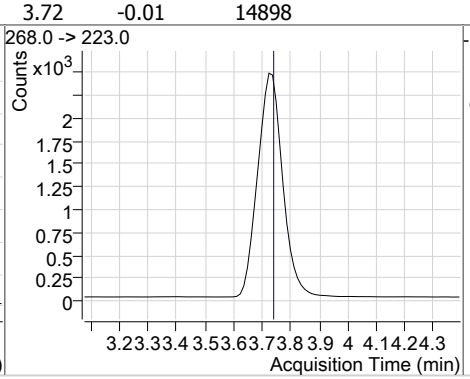


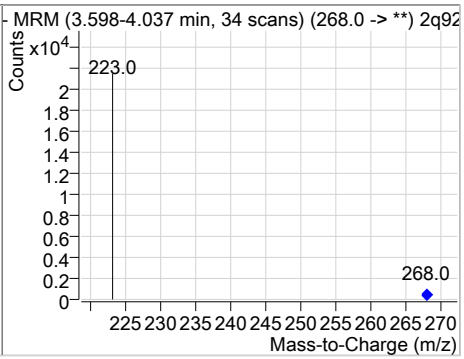




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	3.27	3.72	-0.01	14898				

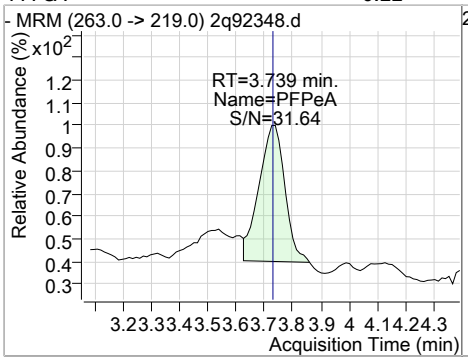


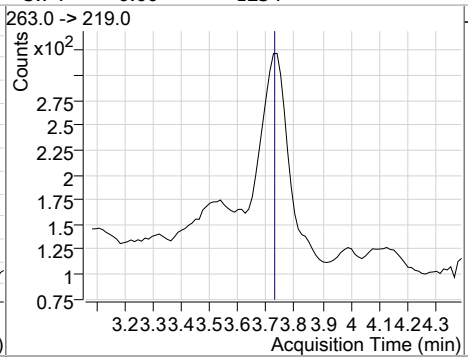


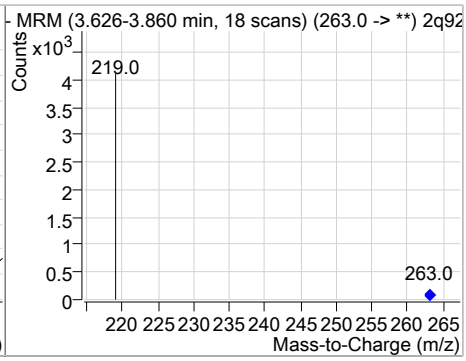


Perfluorinated Compounds by LC/MS/MS

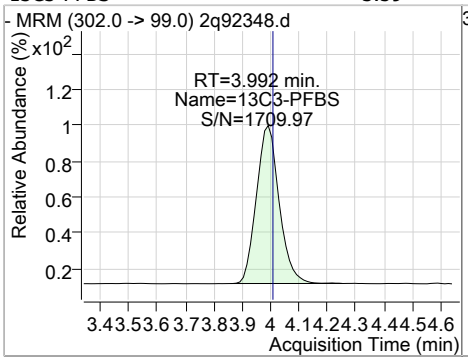
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.22	3.74	0.00	1234				

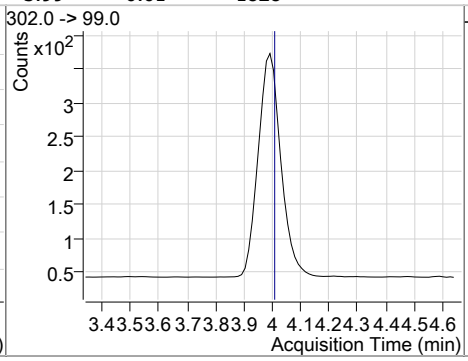


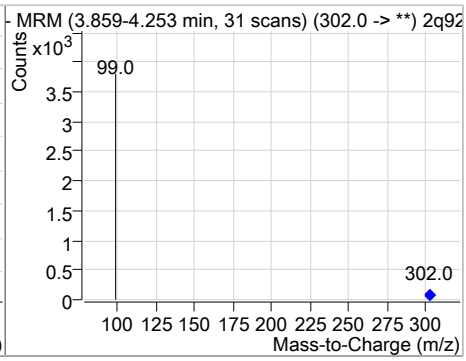




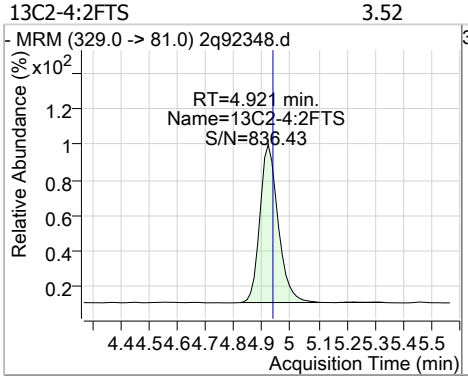
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	3.59	3.99	-0.01	1828				

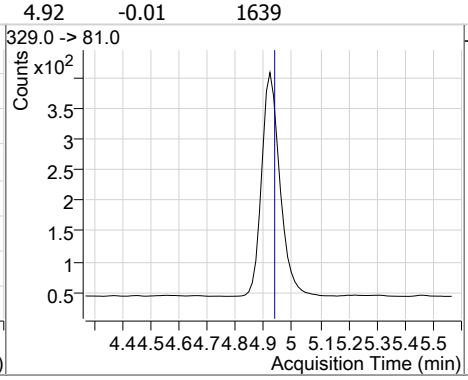


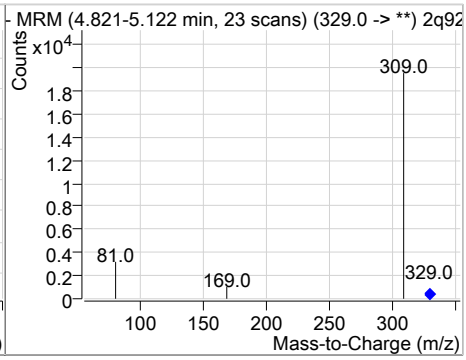




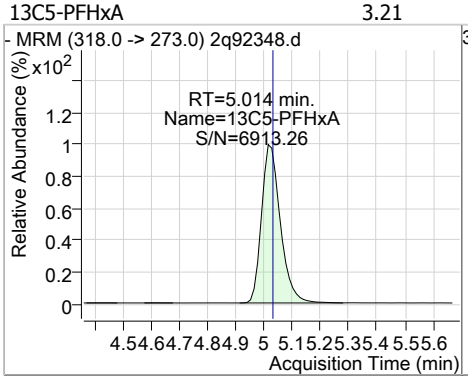
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	3.52	4.92	-0.01	1639				

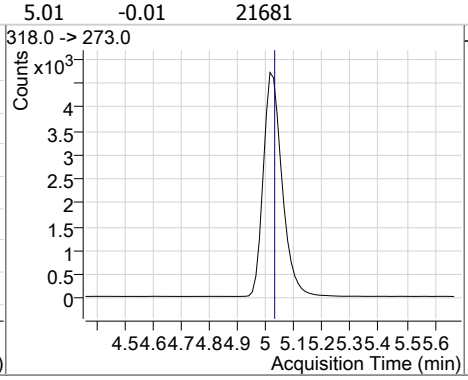


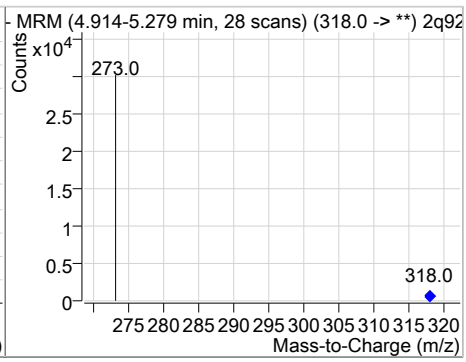




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	3.21	5.01	-0.01	21681				

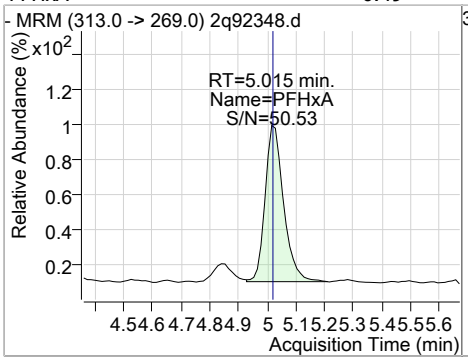


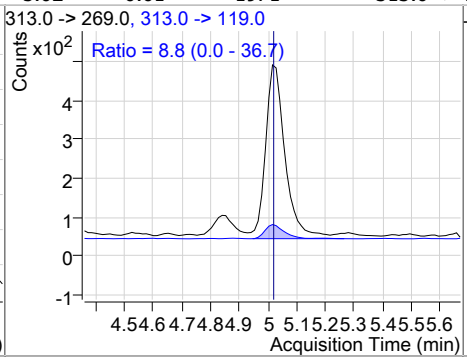


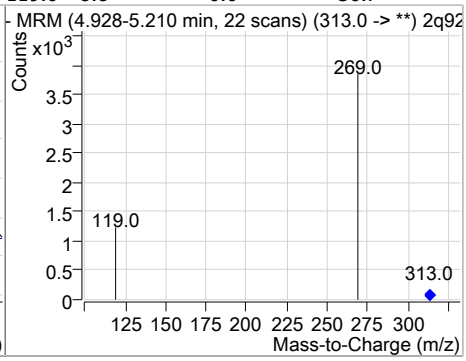


Perfluorinated Compounds by LC/MS/MS

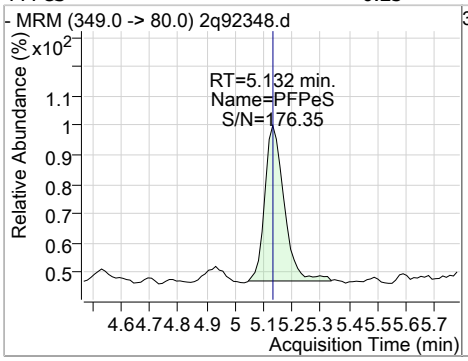
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.49	5.02	-0.01	1971	313.0 -> 119.0	8.8	0.0	36.7

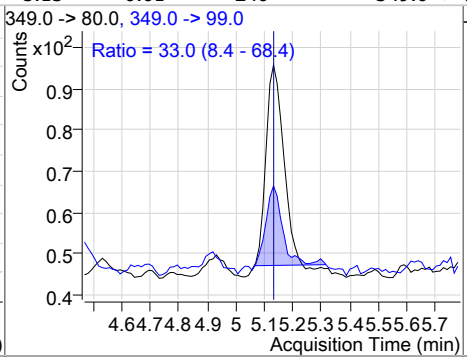


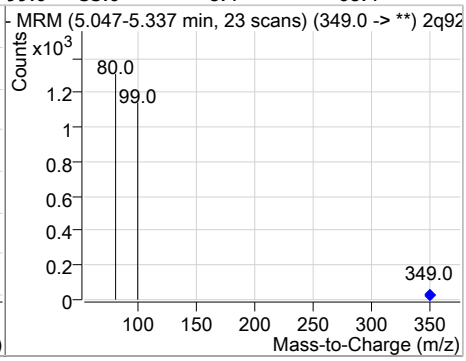




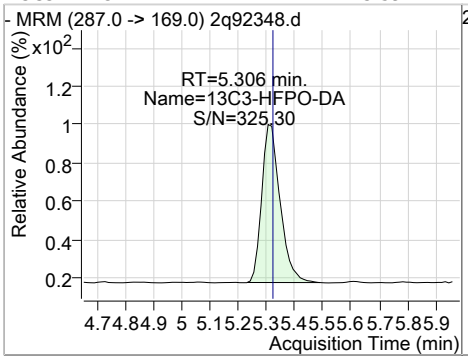
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.23	5.13	-0.01	240	349.0 -> 99.0	33.0	8.4	68.4

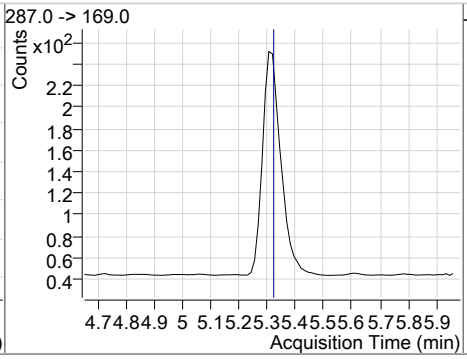


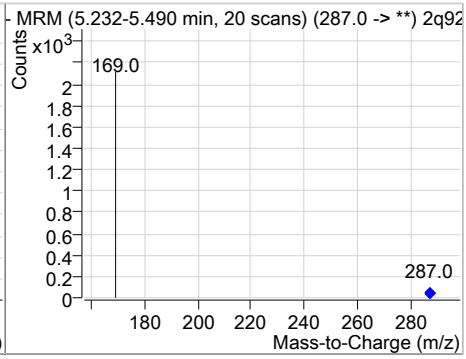




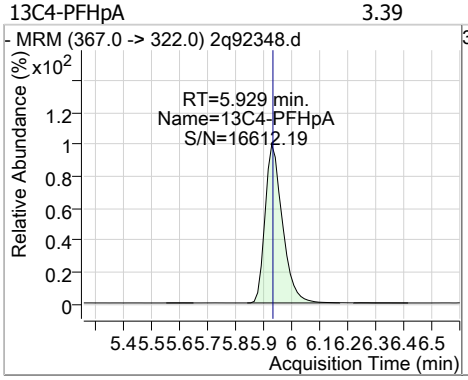
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	3.59	5.31	-0.01	936				

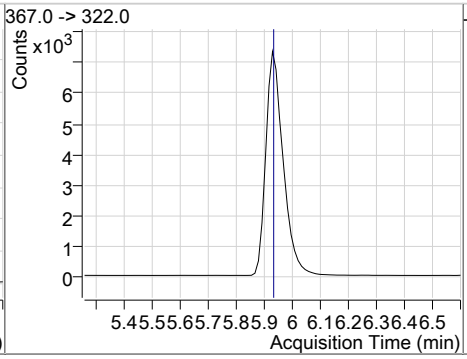


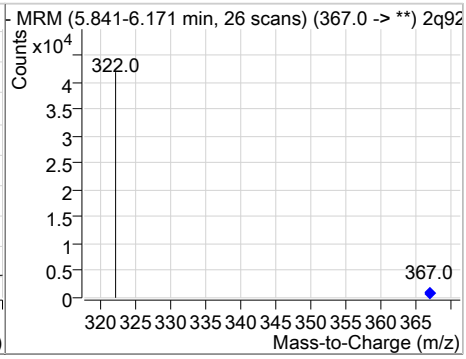




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	3.39	5.93	0.00	31521				

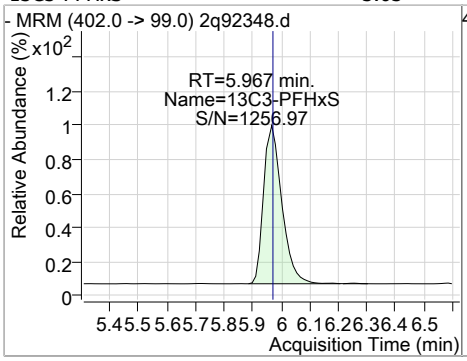


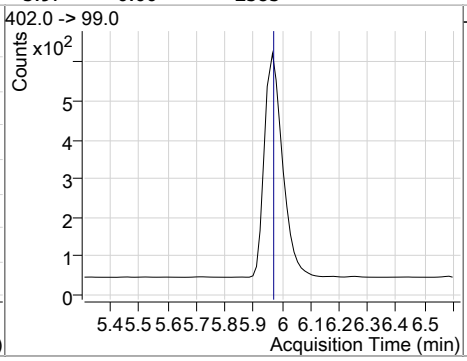


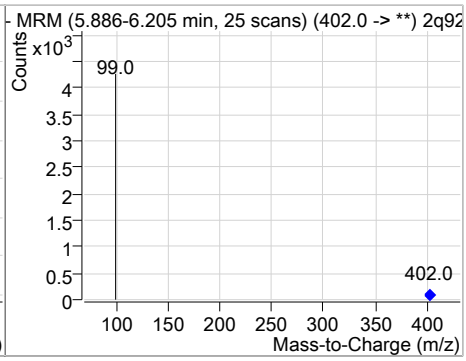


Perfluorinated Compounds by LC/MS/MS

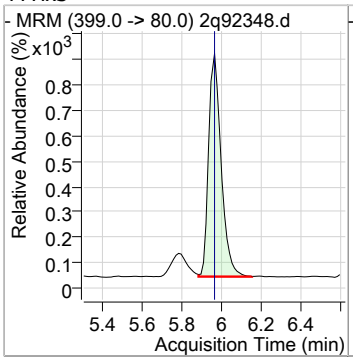
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	3.63	5.97	0.00	2585				

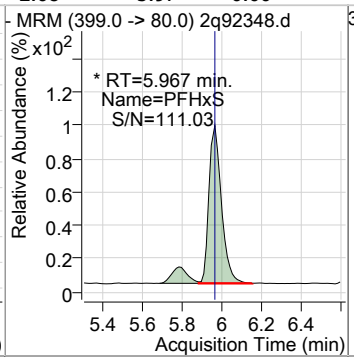


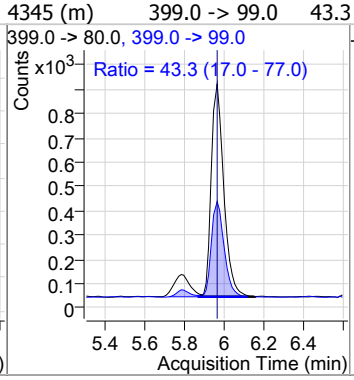


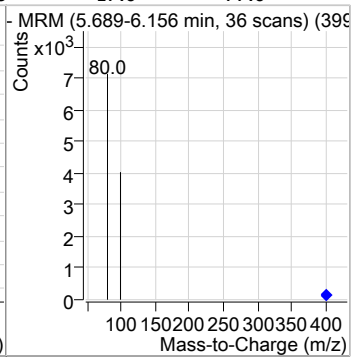


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.68	5.97	0.00	4345 (m)	399.0 -> 99.0	43.3	17.0	77.0

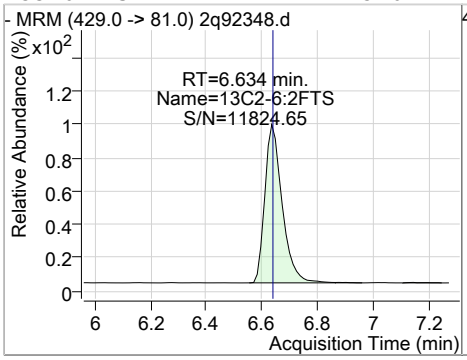


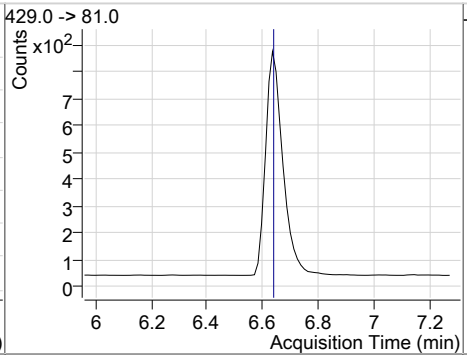


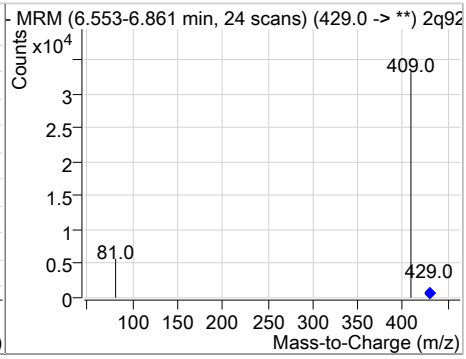




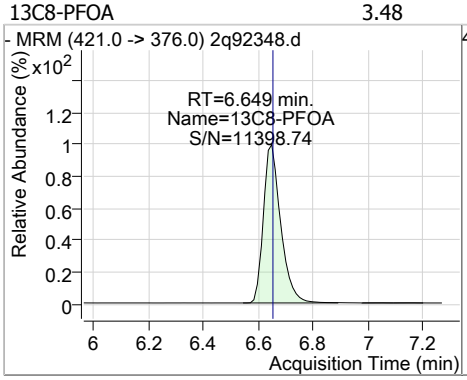
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	3.46	6.63	0.00	3580				

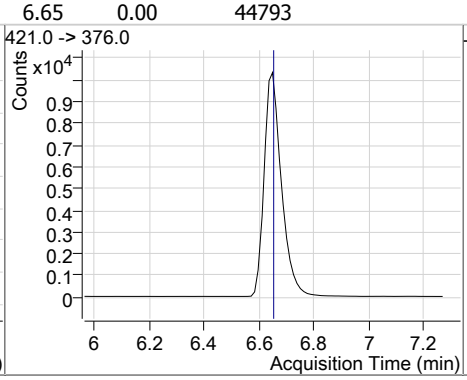


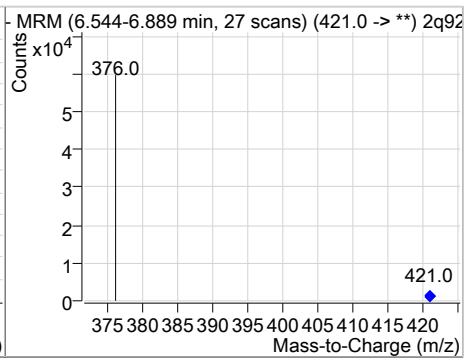




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	3.48	6.65	0.00	44793				

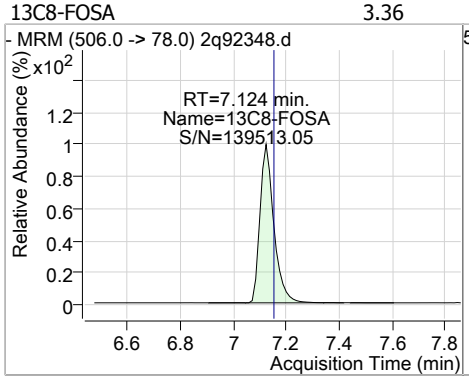


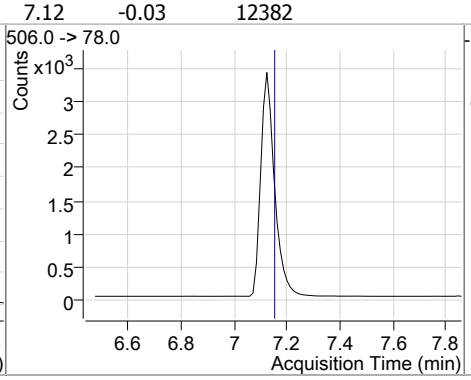


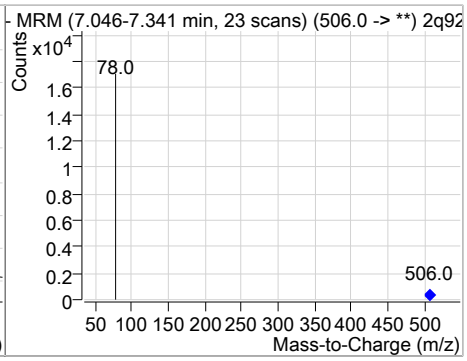


Perfluorinated Compounds by LC/MS/MS

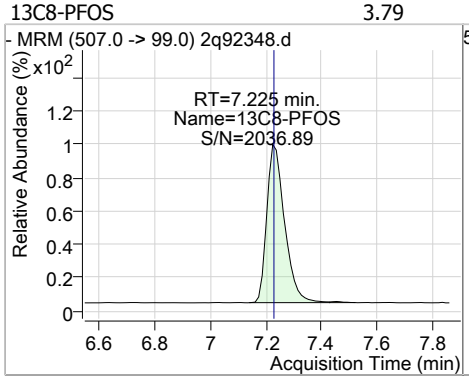
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	3.36	7.12	-0.03	12382				

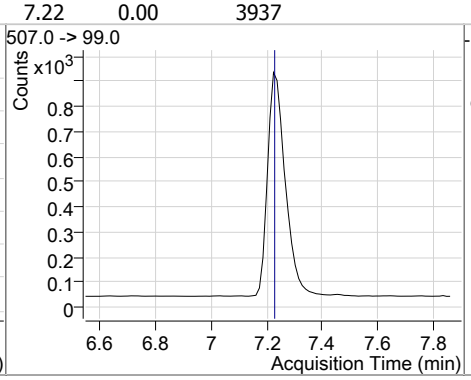


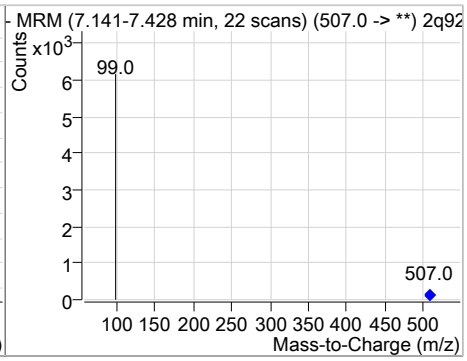




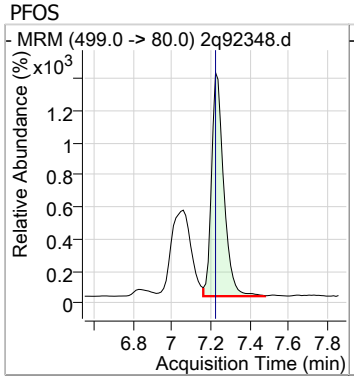
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	3.79	7.22	0.00	3937				

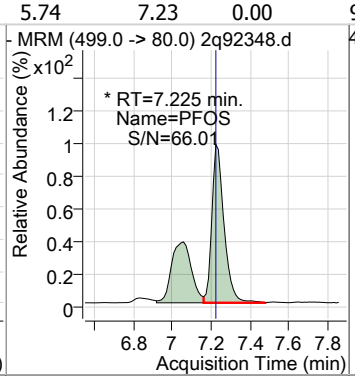


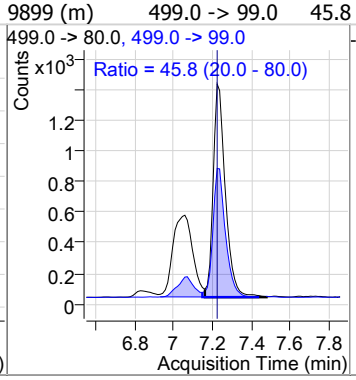


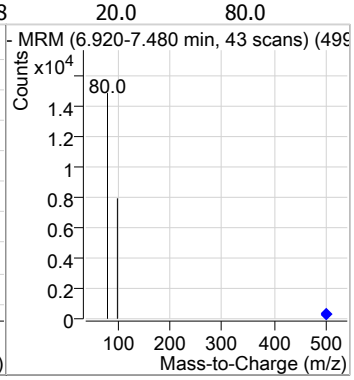


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	5.74	7.23	0.00	9899 (m)	499.0 -> 99.0	45.8	20.0	80.0

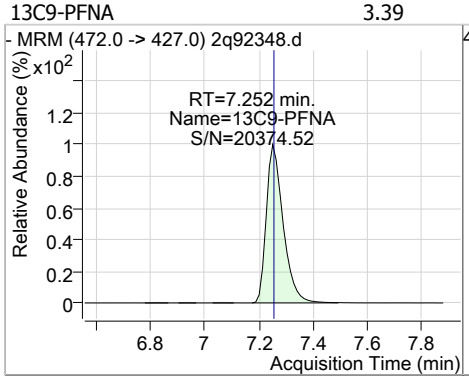


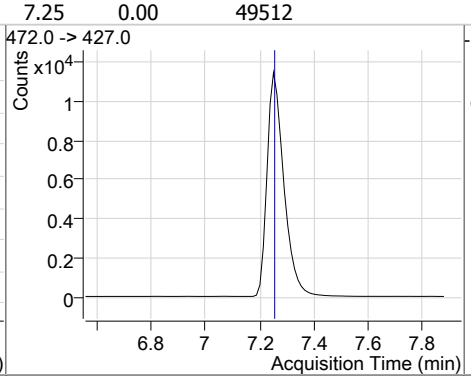


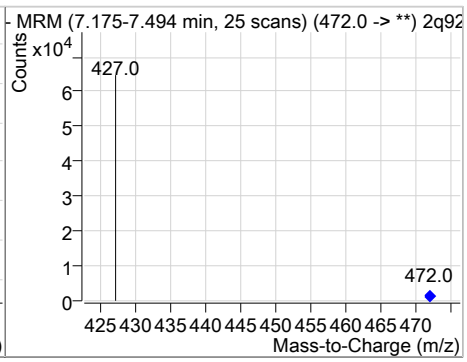




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	3.39	7.25	0.00	49512				

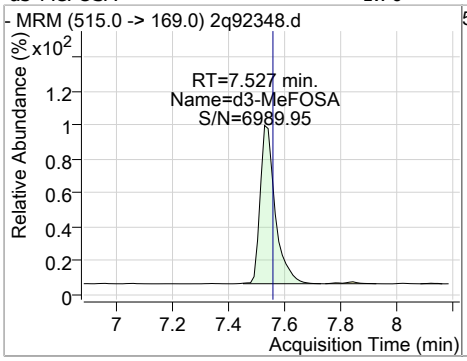


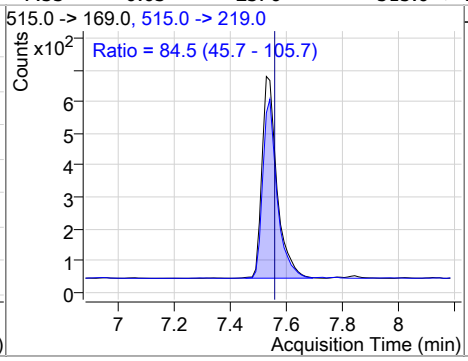


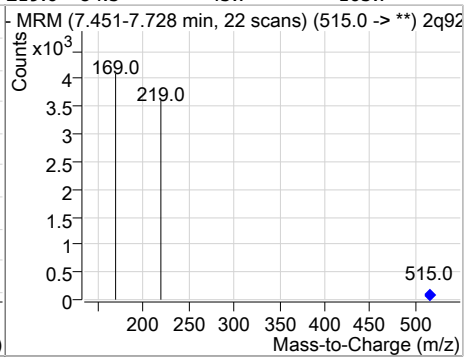


Perfluorinated Compounds by LC/MS/MS

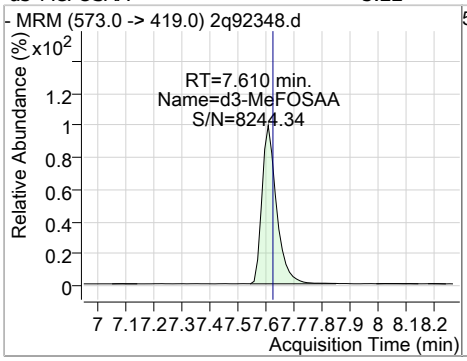
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.70	7.53	-0.03	2376	515.0 -> 219.0	84.5	45.7	105.7

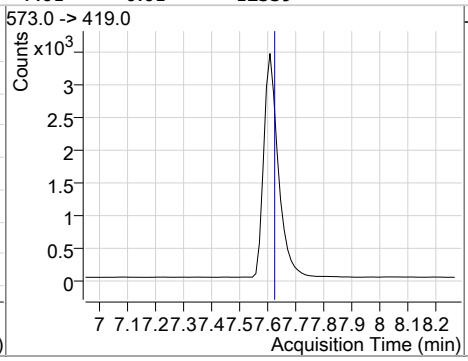


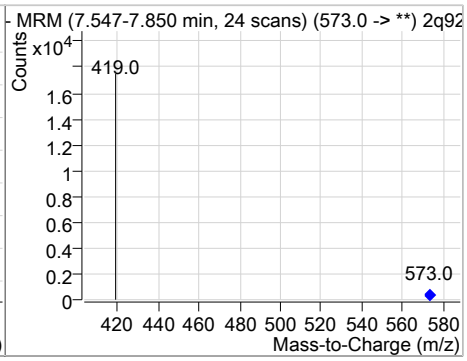




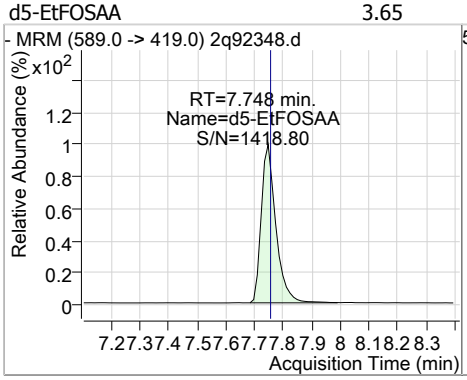
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.22	7.61	-0.01	12339				

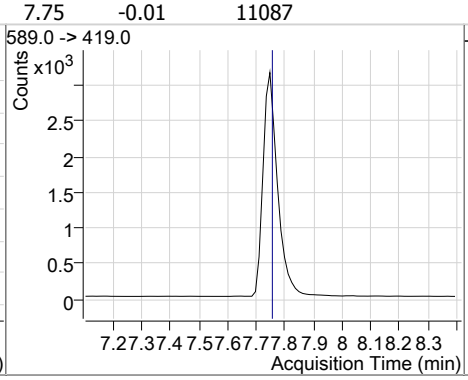


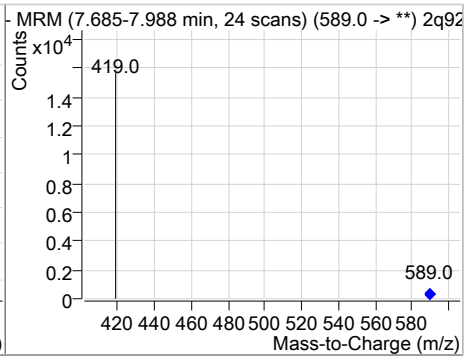




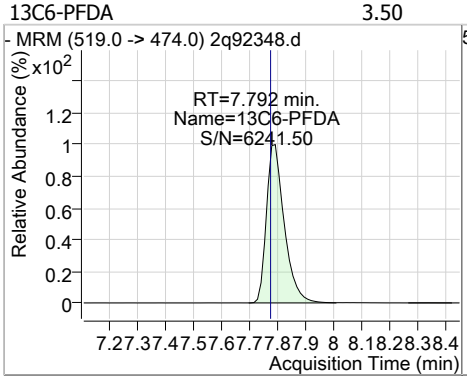
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.65	7.75	-0.01	11087				

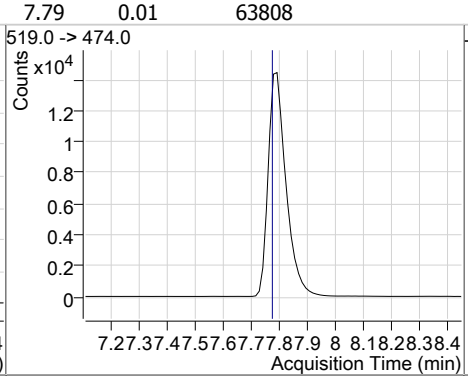


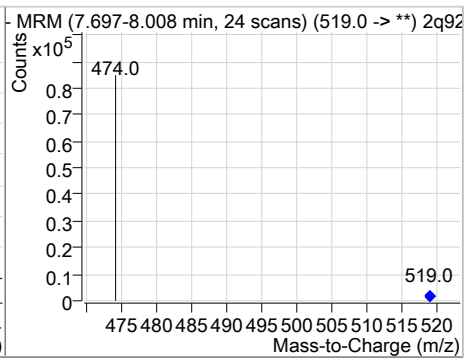




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	3.50	7.79	0.01	63808				

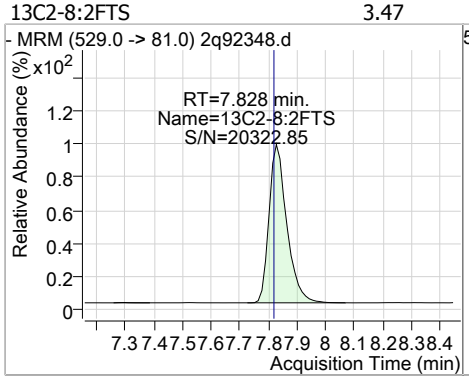


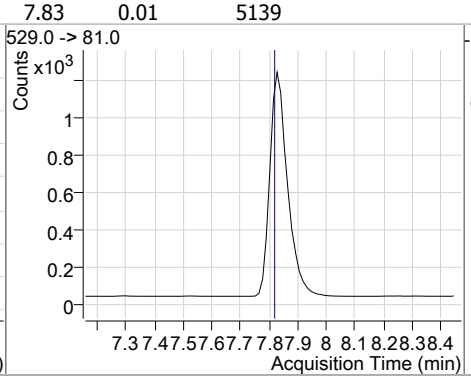


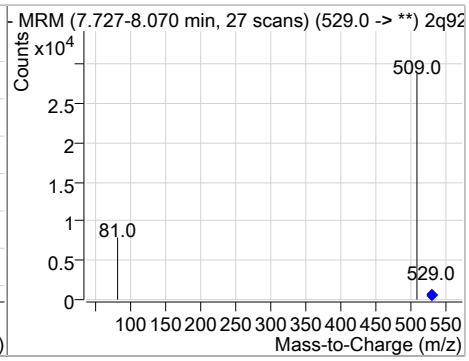


Perfluorinated Compounds by LC/MS/MS

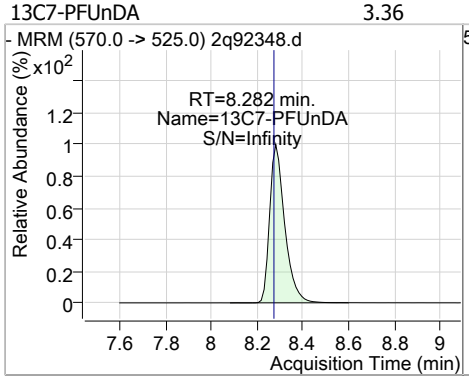
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	3.47	7.83	0.01	5139				

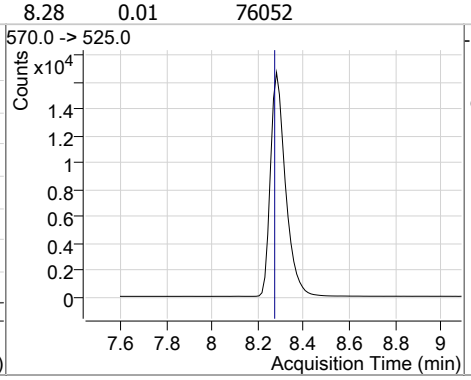


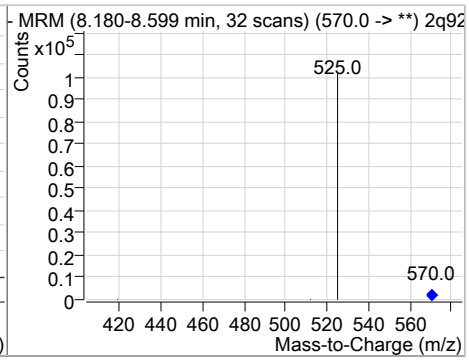




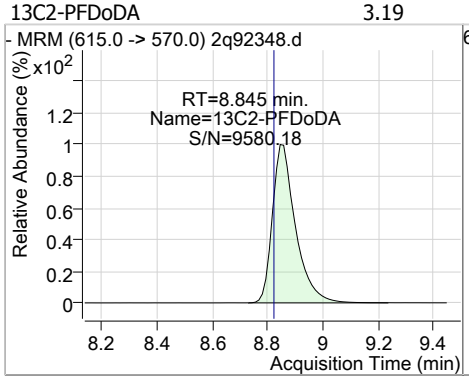
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	3.36	8.28	0.01	76052				

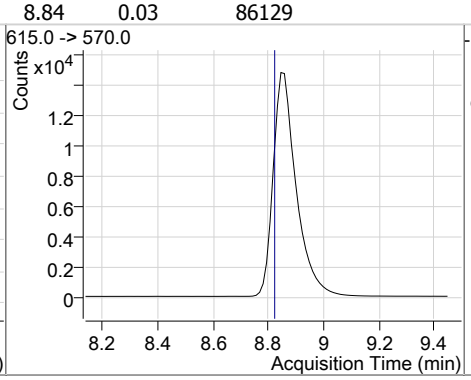


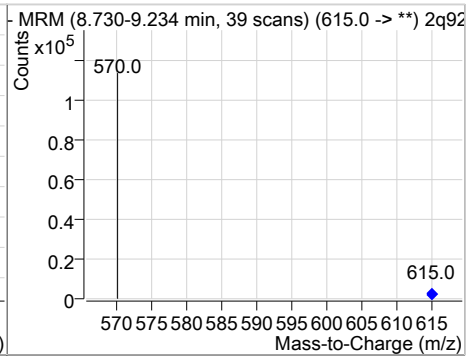




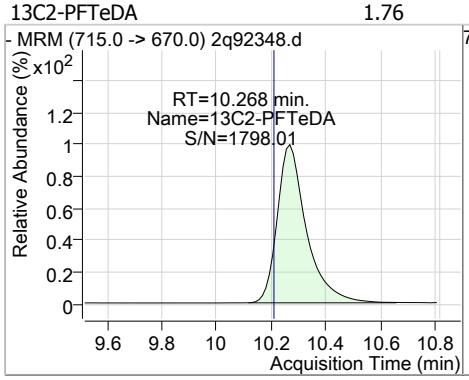
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	3.19	8.84	0.03	86129				

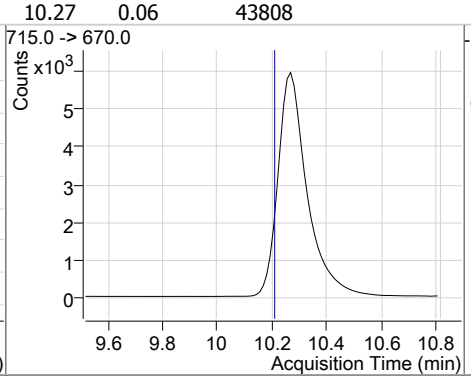


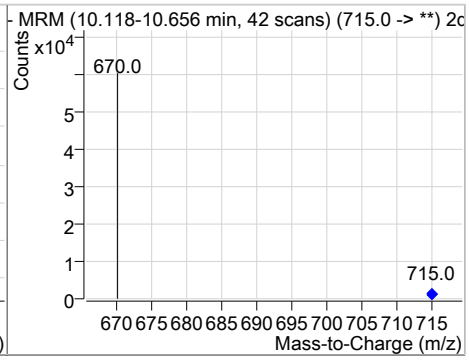




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.76	10.27	0.06	43808				







Manual Integration Approval Summary

Sample Number: FA95742-2
Lab FileID: 2Q92348.D
Injection Time: 06/03/22 13:38
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 11:47 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92328.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 10:05:21 PM
Sample Name : FA95742-3
Vial : P6-C1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

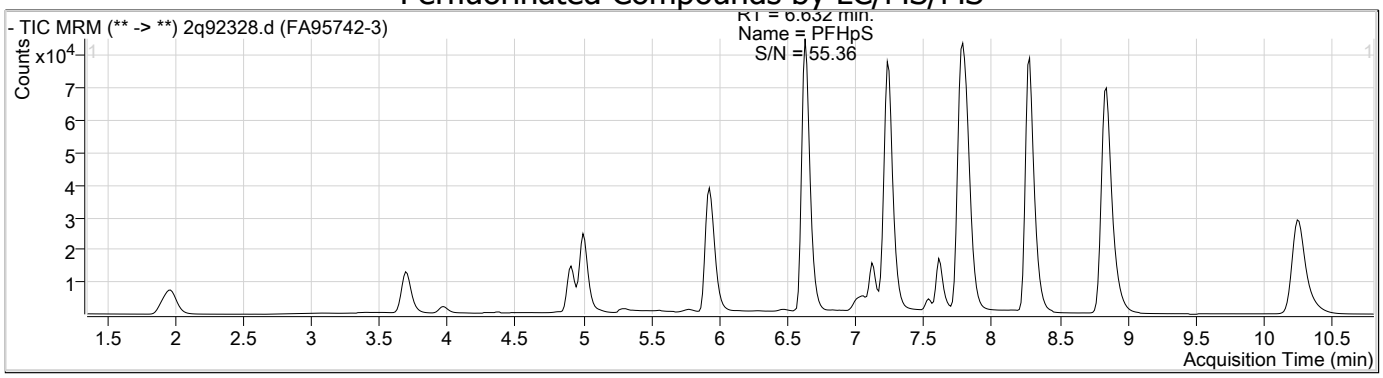
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	46770	20.00	µg/L	-0.013
M4-PFBA	1.964	217.0 -> 172.0	53987	20.00	µg/L	-0.050
M5-PFPeA	3.699	268.0 -> 223.0	58578	20.00	µg/L	-0.038
M5-PFHxA	5.002	318.0 -> 273.0	89877	20.00	µg/L	-0.025
M4-PFHpA	5.916	367.0 -> 322.0	139904	20.00	µg/L	-0.013
M8-PFOA	6.636	421.0 -> 376.0	209810	20.00	µg/L	-0.013
M9-PFNA	7.252	472.0 -> 427.0	236169	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	301562	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	359084	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	399456	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	214744	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	48390	20.00	µg/L	-0.025
M3-PFBS	3.967	302.0 -> 99.0	7303	20.00	µg/L	-0.038
M3-PFHxS	5.948	402.0 -> 99.0	11035	20.00	µg/L	-0.019
M8-PFOS	7.225	507.0 -> 99.0	17169	20.00	µg/L	0.000
M2-4:2FTS	4.909	329.0 -> 81.0	6685	20.00	µg/L	-0.025
M2-6:2FTS	6.634	429.0 -> 81.0	17423	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	24916	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	55011	20.00	µg/L	-0.013
M3-HFPO-DA	5.294	287.0 -> 169.0	3403	20.00	µg/L	-0.025
M3-MeFOSA	7.539	515.0 -> 169.0	6923	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	6685	14.37	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.9%		
13C2-6:2FTS	6.634	429.0 -> 81.0	17423	16.85	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.2%		
13C2-8:2FTS	7.828	529.0 -> 81.0	24916	16.83	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.1%		
13C2-PFDoDA	8.845	615.0 -> 570.0	399456	14.79	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.9%		
13C2-PFTeDA	10.243	715.0 -> 670.0	214744	8.63	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 43.1%		
13C3-PFBS	3.967	302.0 -> 99.0	7303	14.36	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%		
13C3-PFHxS	5.948	402.0 -> 99.0	11035	15.48	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%		
13C4-PFBA	1.964	217.0 -> 172.0	53987	13.97	µg/L	-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.9%		
13C4-PFHpA	5.916	367.0 -> 322.0	139904	15.07	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.3%		
d5-EtFOSAA	7.748	589.0 -> 419.0	46770	15.41	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.0%		
13C5-PFHxA	5.002	318.0 -> 273.0	89877	13.31	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.6%		
13C5-PFPeA	3.699	268.0 -> 223.0	58578	12.85	µg/L	-0.038

Perfluorinated Compounds by LC/MS/MS

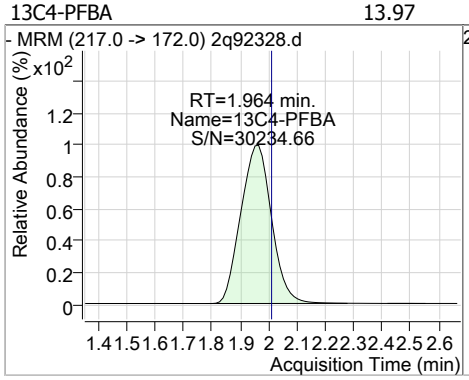
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.3%		
13C6-PFDA	7.779	519.0 -> 474.0	301562	16.56 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.8%		
13C7-PFUnDA	8.282	570.0 -> 525.0	359084	15.87 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%		
13C8-FOSA	7.124	506.0 -> 78.0	48390	13.15 µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.7%		
13C8-PFOA	6.636	421.0 -> 376.0	209810	16.30 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.5%		
13C8-PFOS	7.225	507.0 -> 99.0	17169	16.54 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%		
13C9-PFNA	7.252	472.0 -> 427.0	236169	16.19 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
d3-MeFOSAA	7.610	573.0 -> 419.0	55011	14.34 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.7%		
13C3-HFPO-DA	5.294	287.0 -> 169.0	3403	13.07 µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.3%		
d3-MeFOSA	7.539	515.0 -> 169.0	6923	4.95 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 24.7%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	1.958	213.0 -> 169.0	1891	1.37 µg/L		100
PFBS	3.969	299.0 -> 80.0	1533	1.26 µg/L		98
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	5.917	363.0 -> 319.0	7802	0.68 µg/L		99
PFHpS	6.632	449.0 -> 80.0	1392	1.07 µg/L	m	100
PFHxA	5.003	313.0 -> 269.0	11170	3.36 µg/L		98
PFHxS	5.949	399.0 -> 80.0	25856	18.67 µg/L	m	94
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.637	413.0 -> 369.0	15678	1.38 µg/L	m	95
PFOS	7.225	499.0 -> 80.0	88232	58.71 µg/L	m	100
PFPeA	3.701	263.0 -> 219.0	6858	1.52 µg/L		100
PFPeS	5.120	349.0 -> 80.0	1462	1.76 µg/L	m	99
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		
MeFOSA	-	512.0 -> 219.0	-	N.D.		

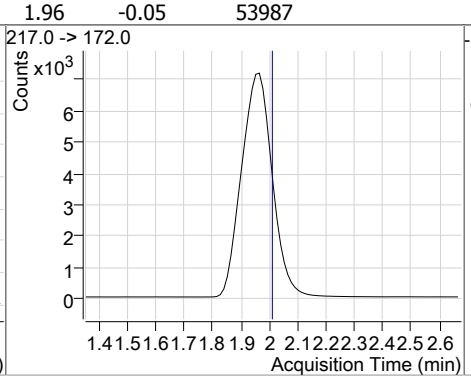
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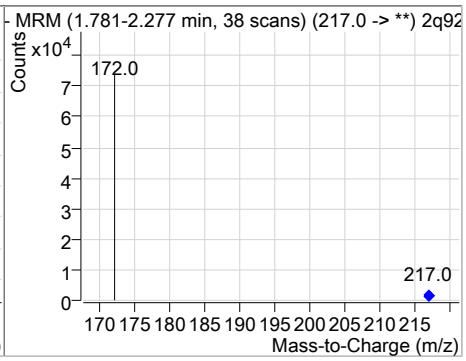
Perfluorinated Compounds by LC/MS/MS



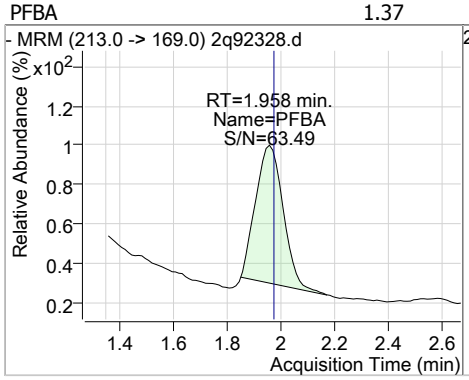
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.97	1.96	-0.05	53987				

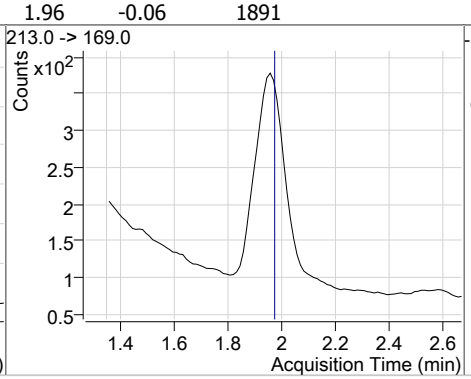


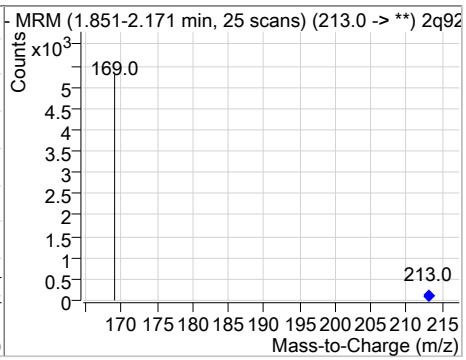




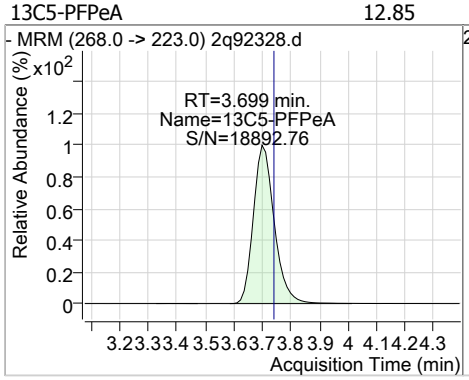
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.37	1.96	-0.06	1891				

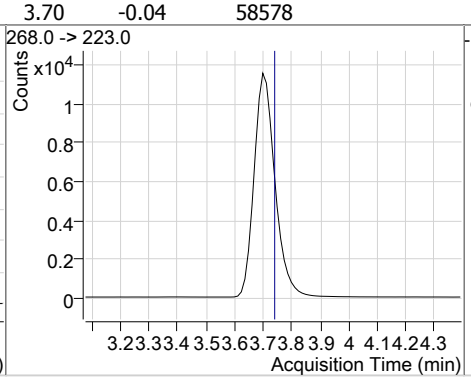


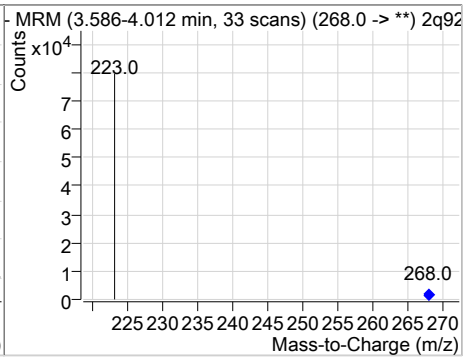




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	12.85	3.70	-0.04	58578				

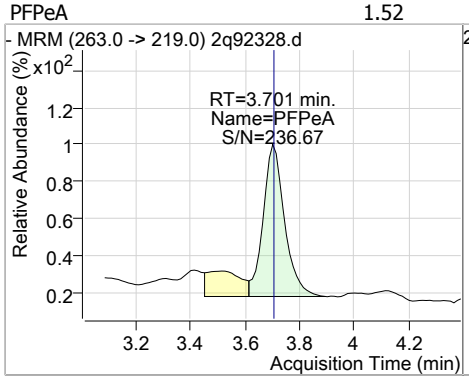


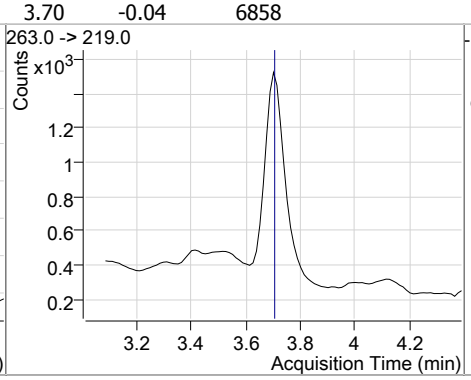


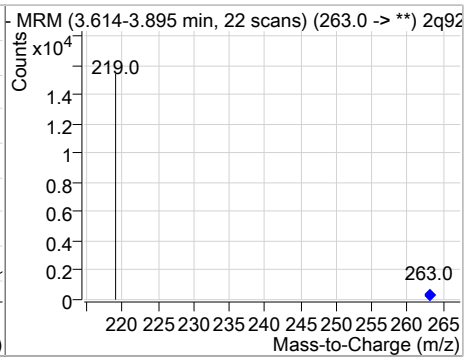


Perfluorinated Compounds by LC/MS/MS

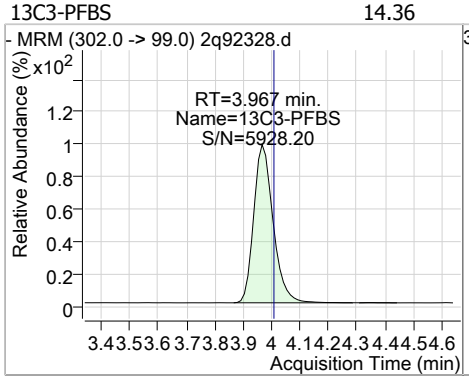
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.52	3.70	-0.04	6858				

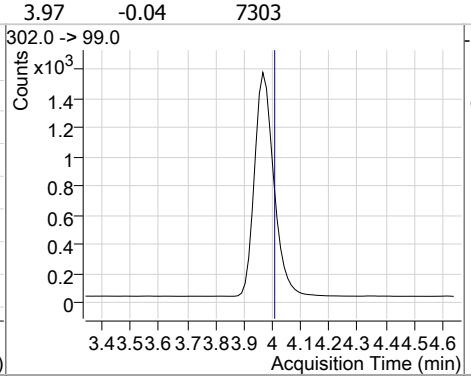


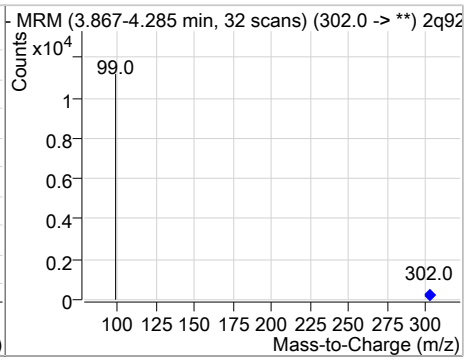




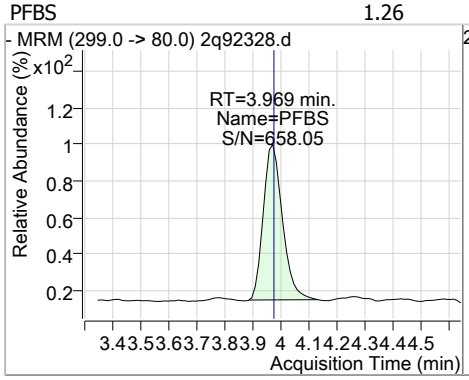
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.36	3.97	-0.04	7303				

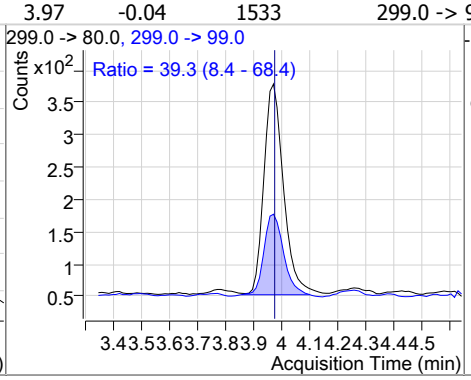


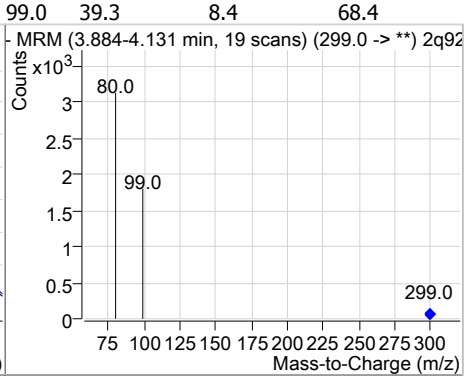




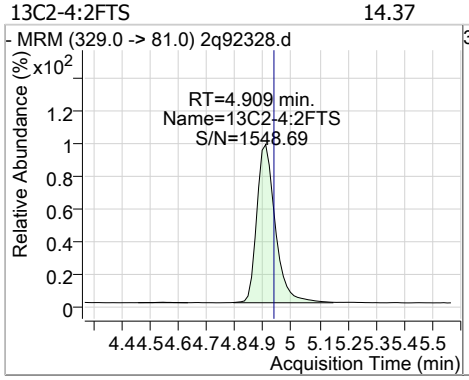
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.26	3.97	-0.04	1533	299.0 -> 99.0	39.3	8.4	68.4

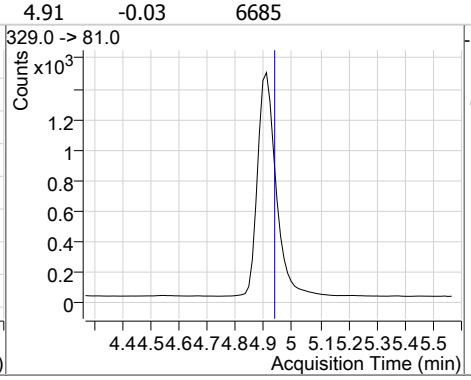


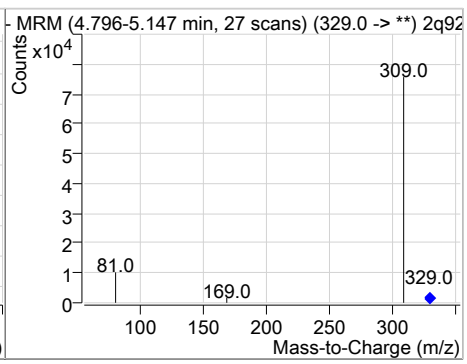




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.37	4.91	-0.03	6685				

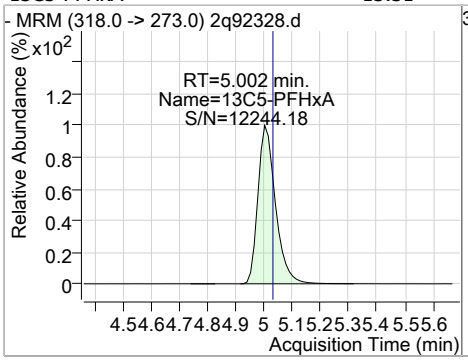


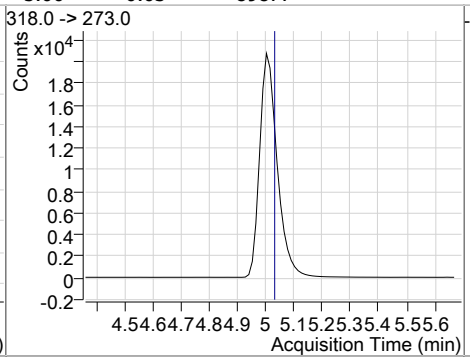


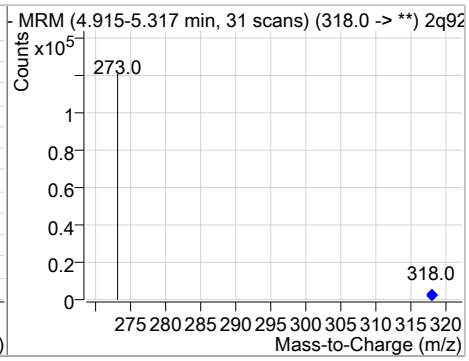


Perfluorinated Compounds by LC/MS/MS

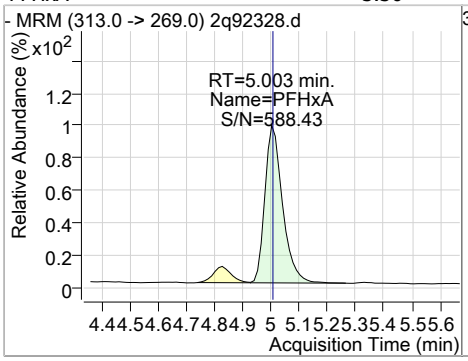
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.31	5.00	-0.03	89877				

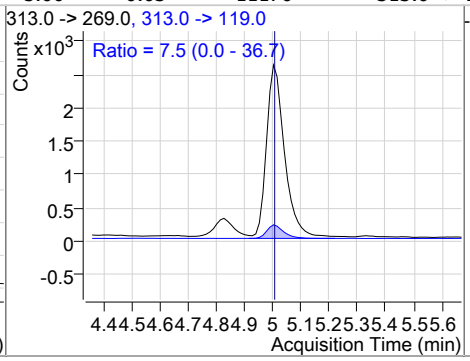


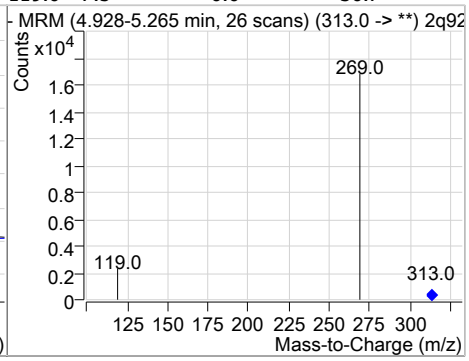




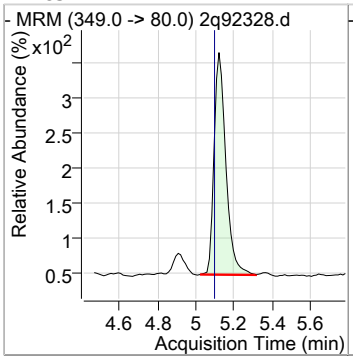
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	3.36	5.00	-0.03	11170	313.0 -> 119.0	7.5	0.0	36.7

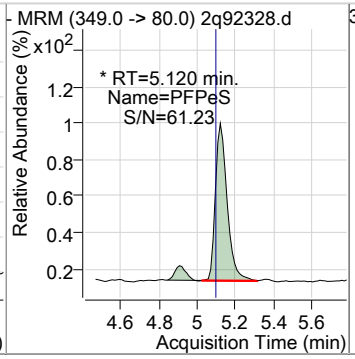


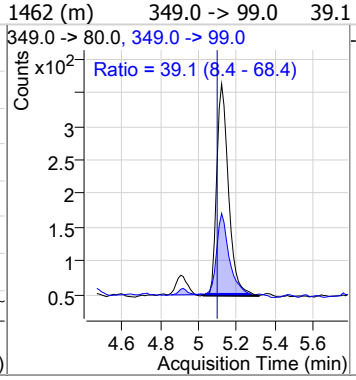


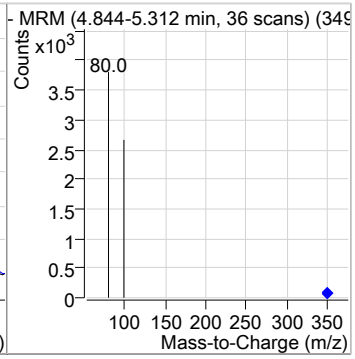


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.76	5.12	-0.03	1462 (m)	349.0 -> 99.0	39.1	8.4	68.4

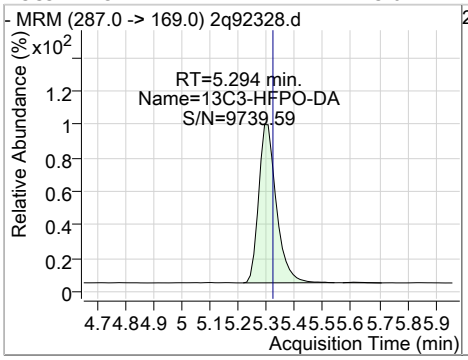


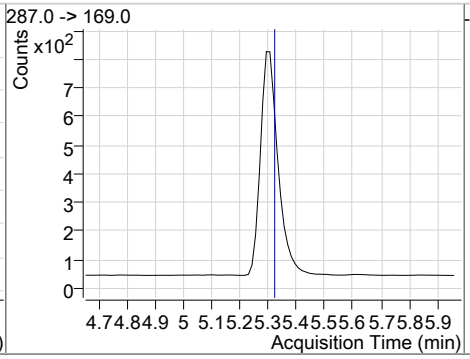


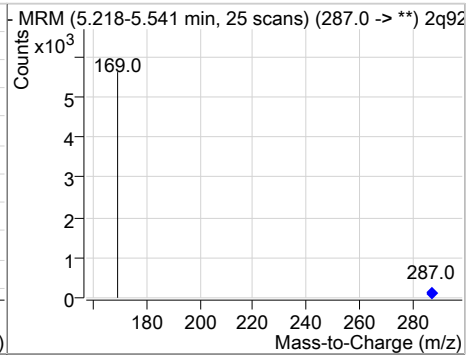




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	13.07	5.29	-0.03	3403				

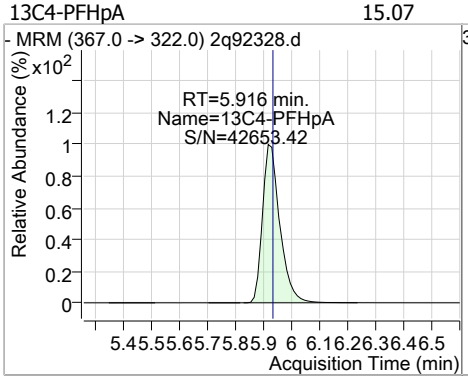


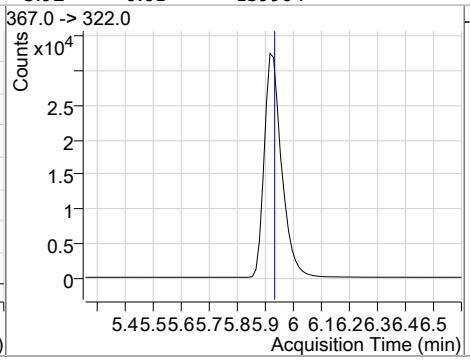


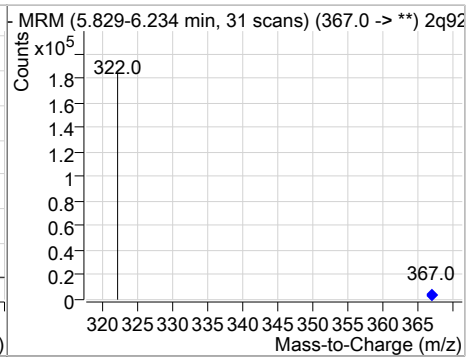


Perfluorinated Compounds by LC/MS/MS

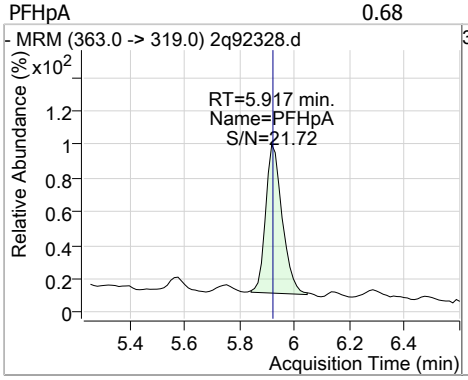
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.07	5.92	-0.01	139904				

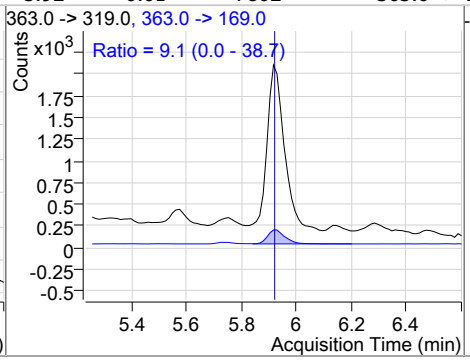


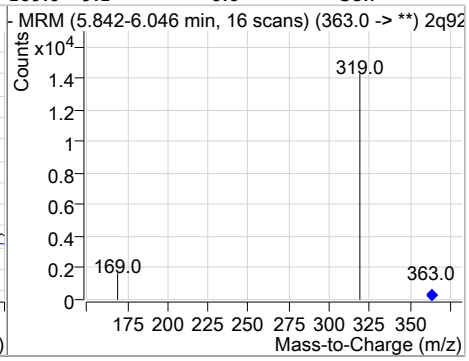




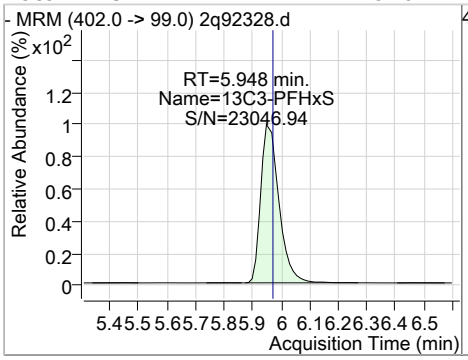
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.68	5.92	-0.01	7802	363.0 -> 169.0	9.1	0.0	38.7

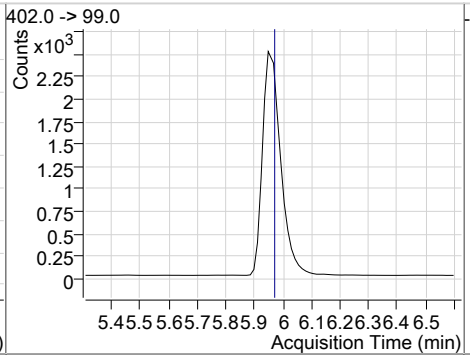


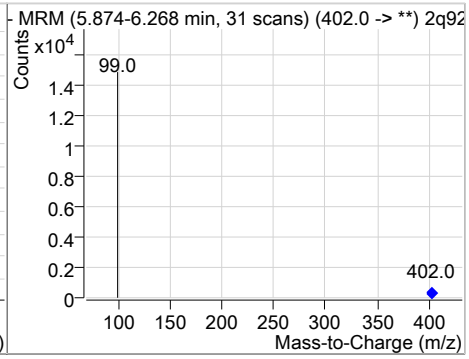




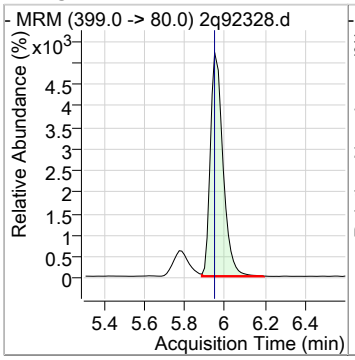
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.48	5.95	-0.02	11035				

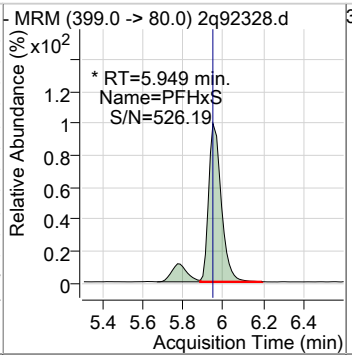


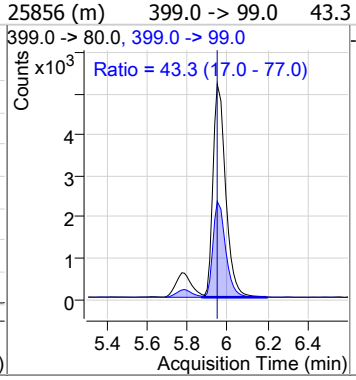


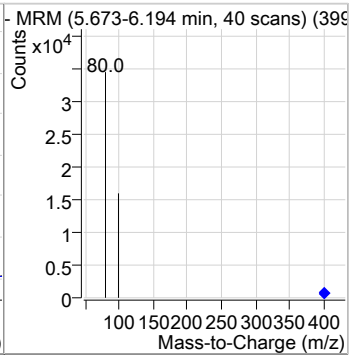


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	18.67	5.95	-0.02	25856 (m)	399.0 -> 99.0	43.3	17.0	77.0



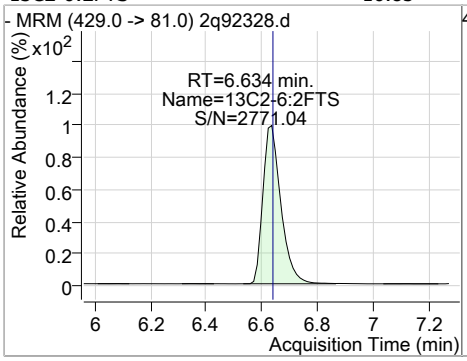


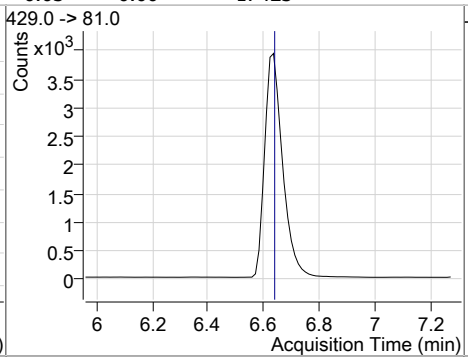


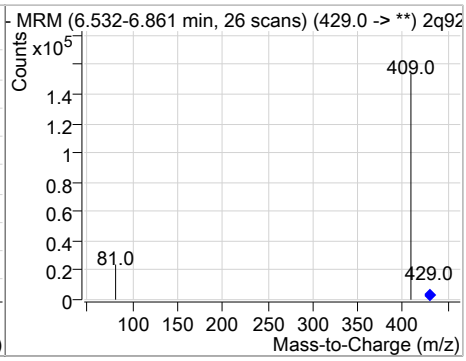


Perfluorinated Compounds by LC/MS/MS

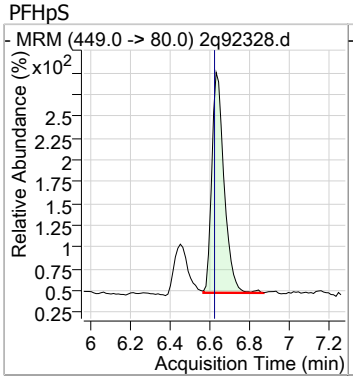
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	16.85	6.63	0.00	17423				

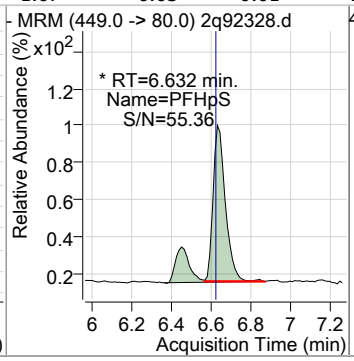


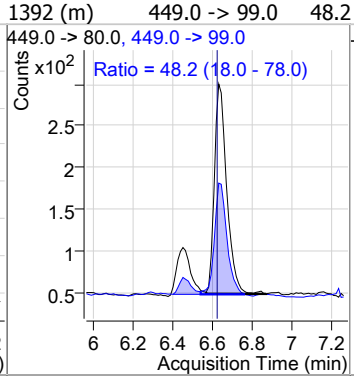


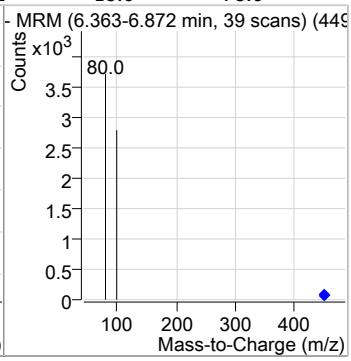


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.07	6.63	-0.01	1392 (m)	449.0 -> 99.0	48.2	18.0	78.0

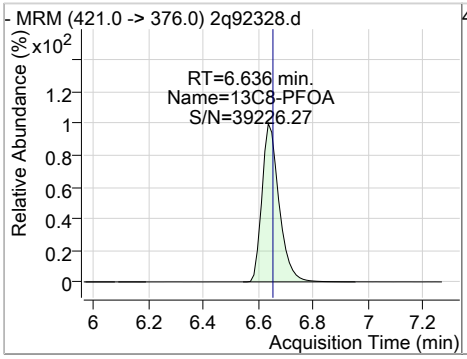


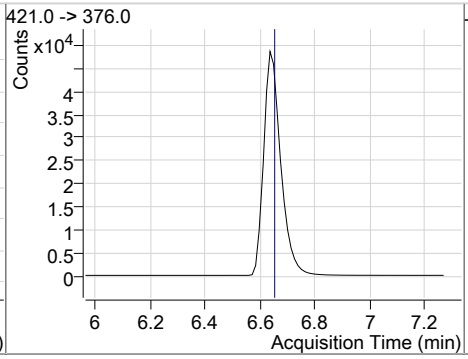


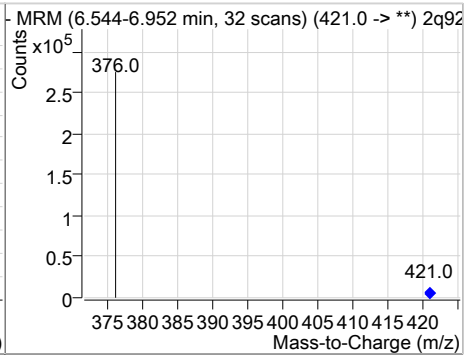




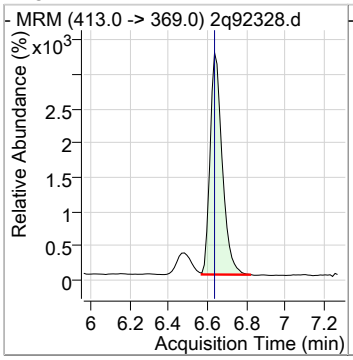
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.30	6.64	-0.01	209810				

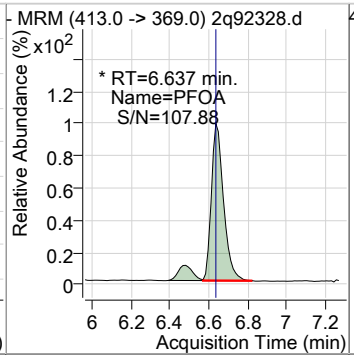


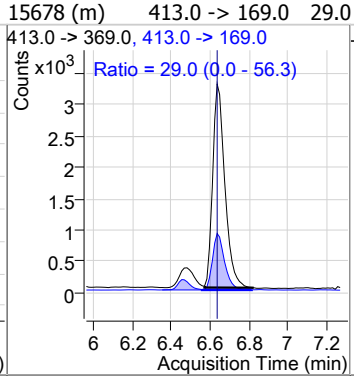


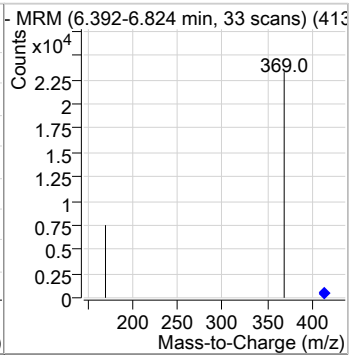


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.38	6.64	-0.01	15678 (m)	413.0 -> 169.0	29.0	0.0	56.3



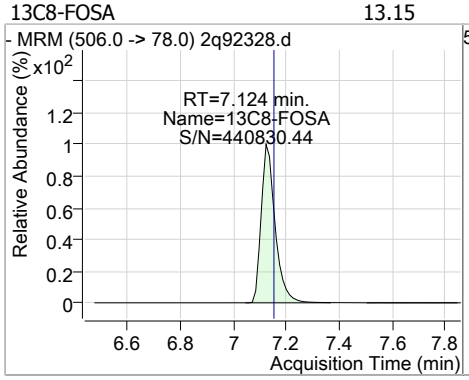


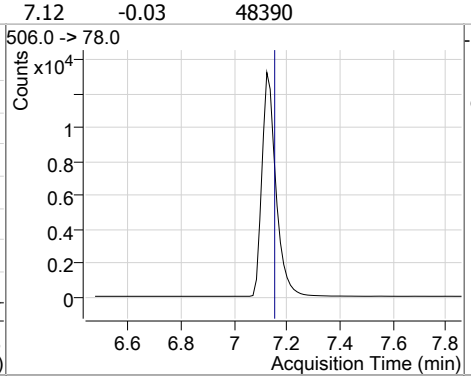


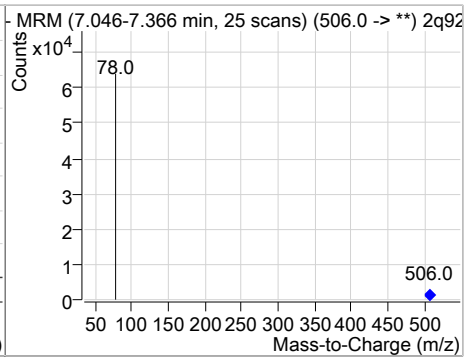


Perfluorinated Compounds by LC/MS/MS

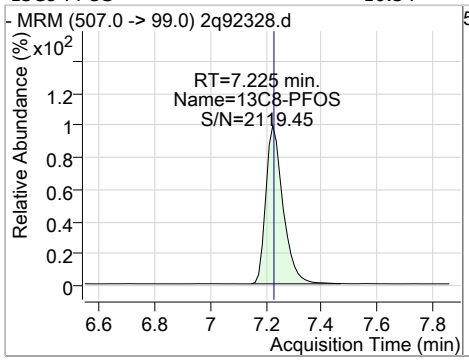
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	13.15	7.12	-0.03	48390				

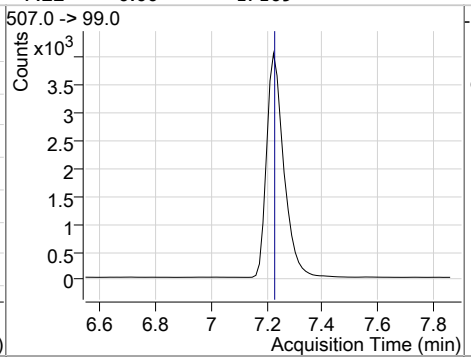


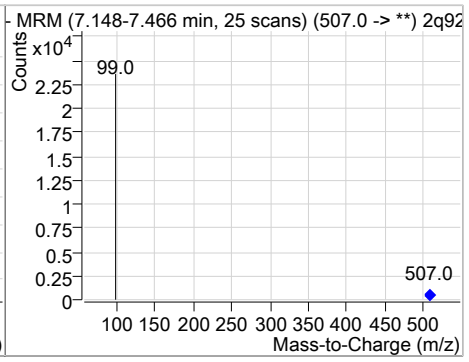




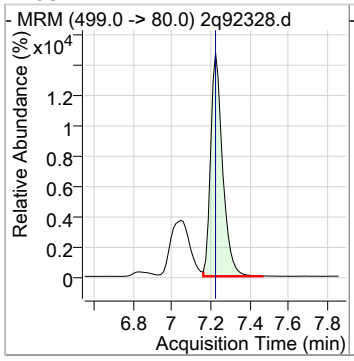
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.54	7.22	0.00	17169				

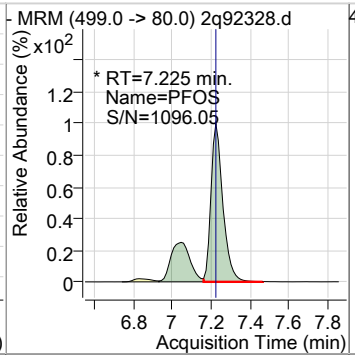


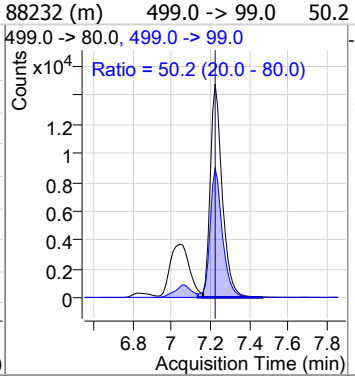


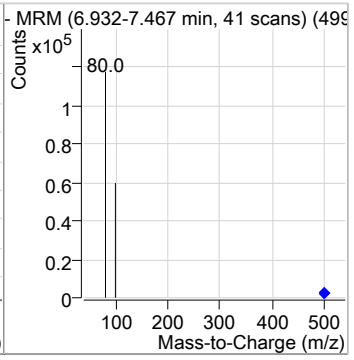


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	58.71	7.23	0.00	88232 (m)	499.0 -> 99.0	50.2	20.0	80.0

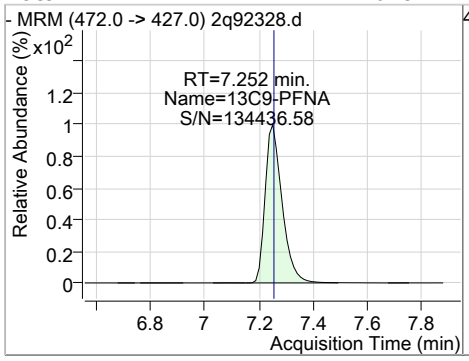


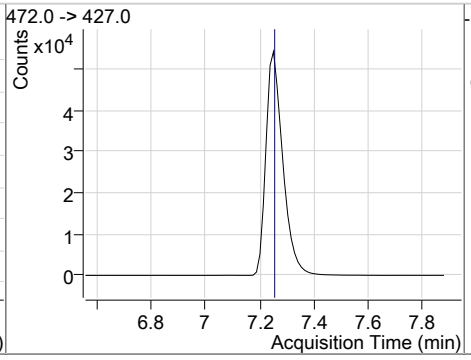


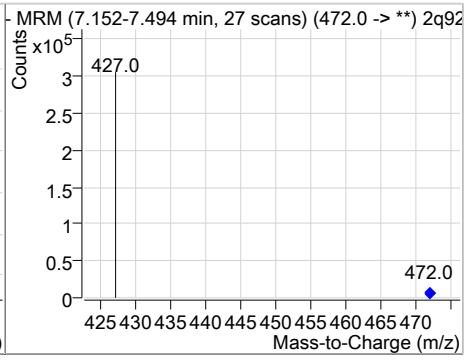




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.19	7.25	0.00	236169				

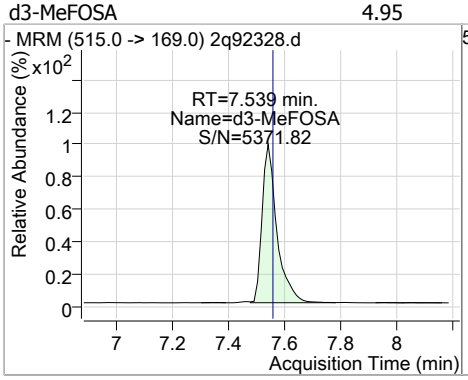


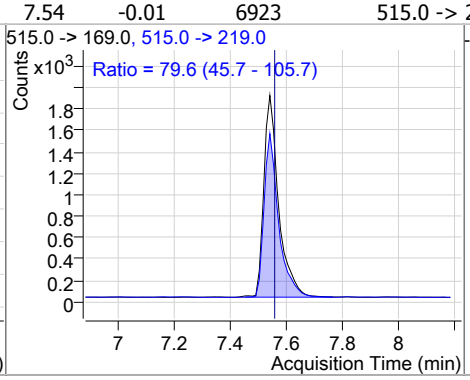


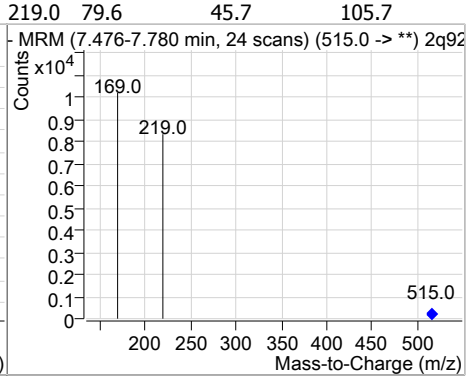


Perfluorinated Compounds by LC/MS/MS

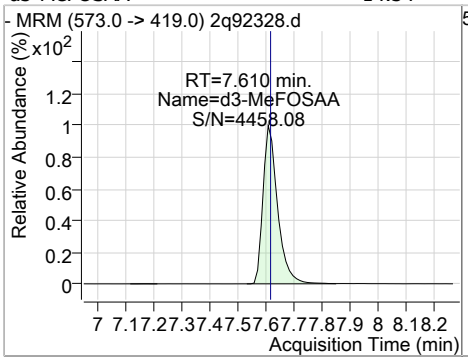
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	4.95	7.54	-0.01	6923	515.0 -> 219.0	79.6	45.7	105.7

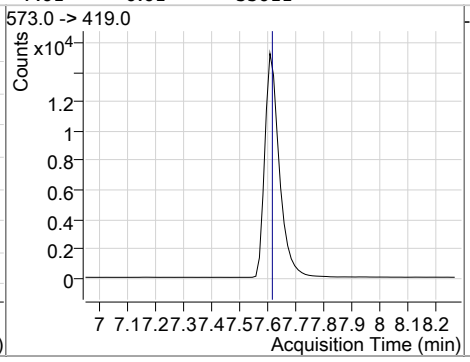


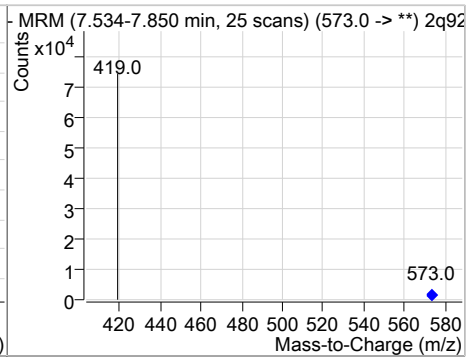




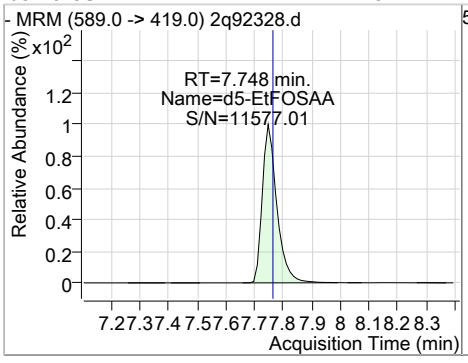
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.34	7.61	-0.01	55011				

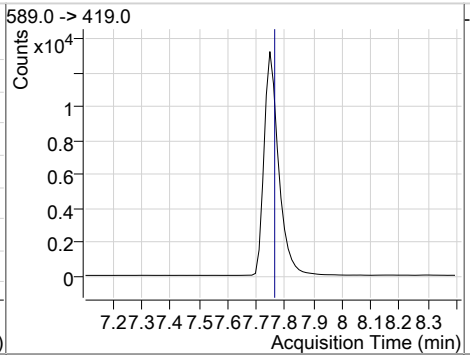


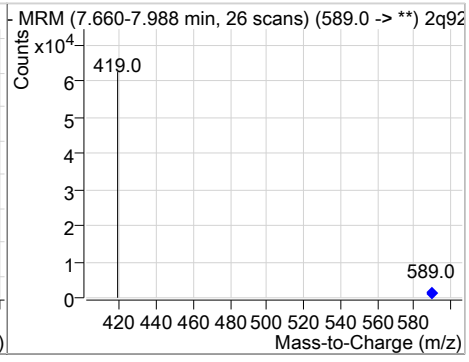




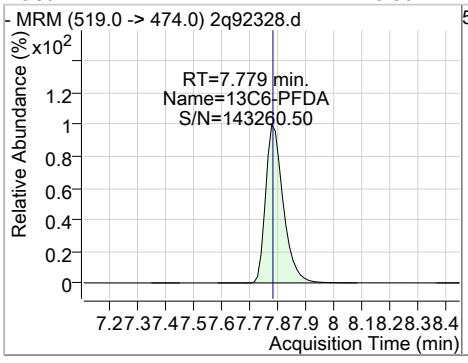
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	15.41	7.75	-0.01	46770				

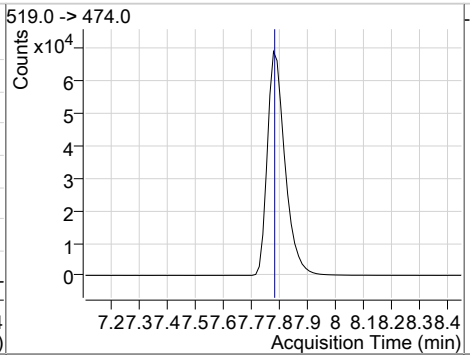


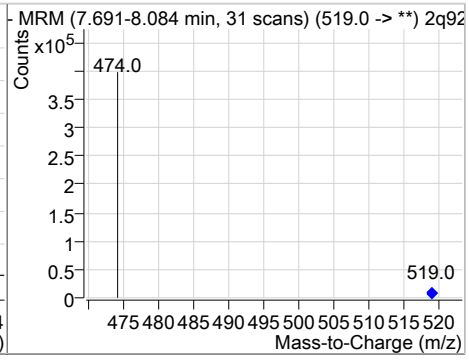




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.56	7.78	0.00	301562				

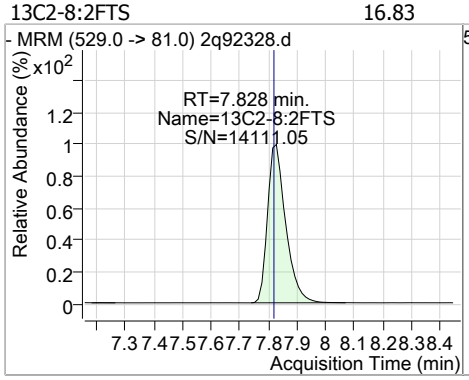


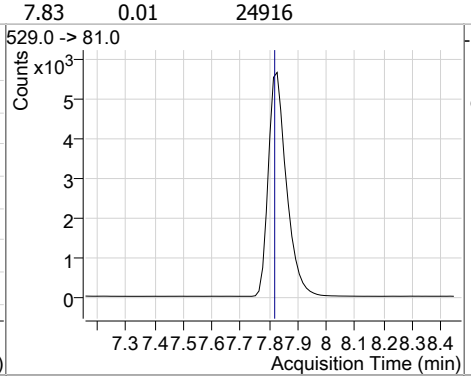


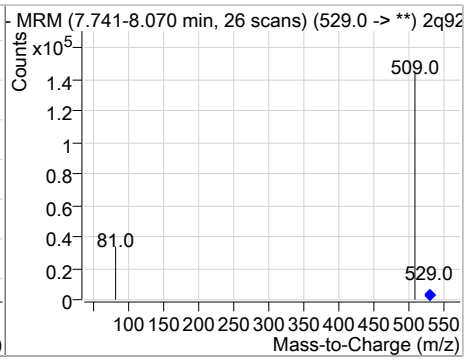


Perfluorinated Compounds by LC/MS/MS

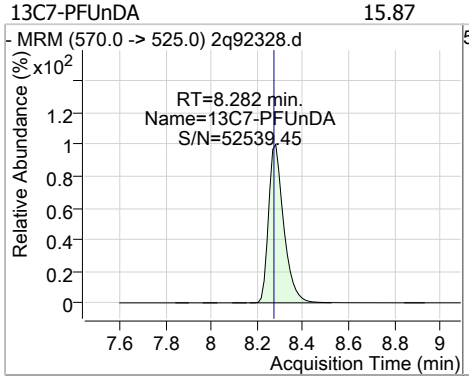
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.83	7.83	0.01	24916				

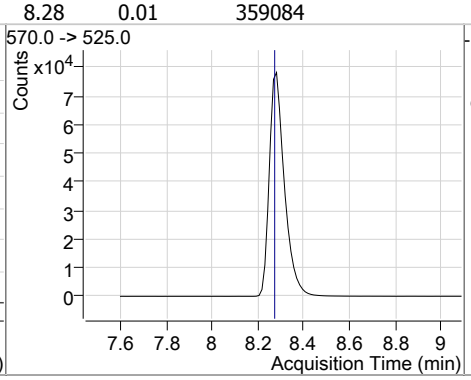


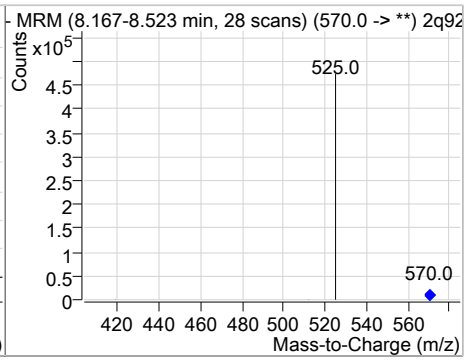




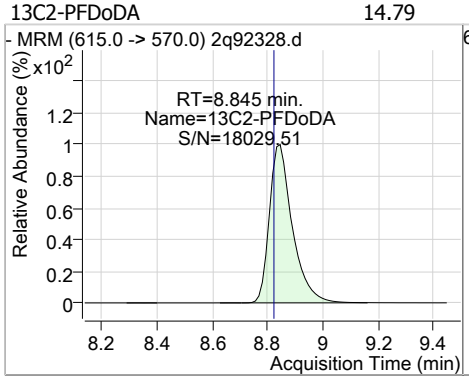
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.87	8.28	0.01	359084				

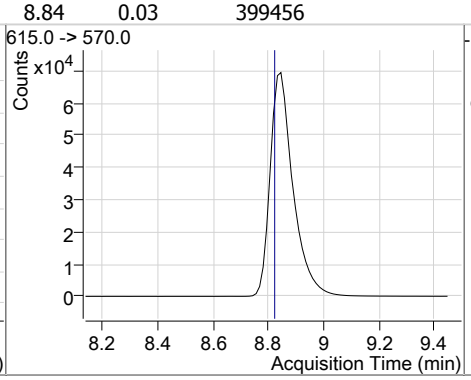


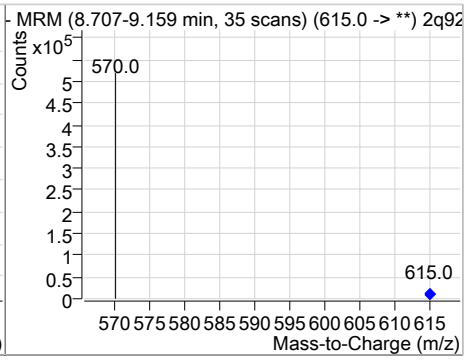




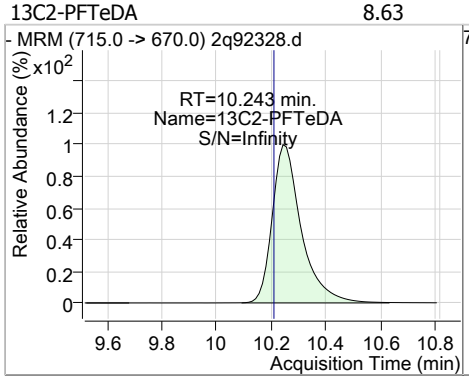
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.79	8.84	0.03	399456				

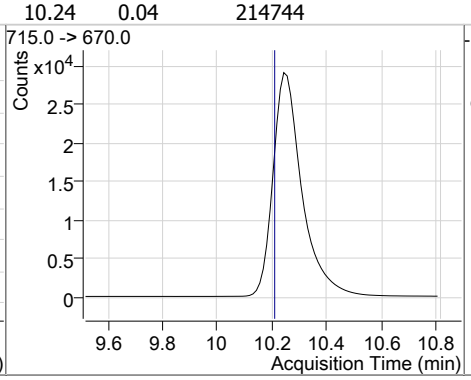


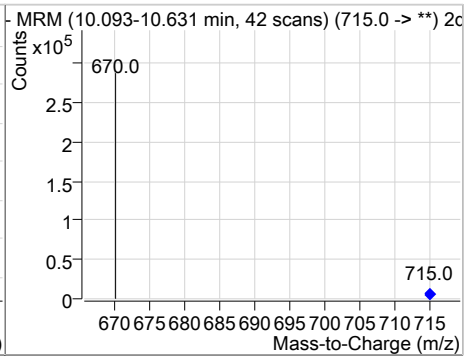




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	8.63	10.24	0.04	214744				







Manual Integration Approval Summary

Sample Number: FA95742-3
Lab FileID: 2Q92328.D
Injection Time: 06/02/22 22:05
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:07 Natasha Gumtie
Supervisor approved: 06/08/22 15:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		5.12	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.63	Split peak
Perfluorooctanoic acid	335-67-1		6.64	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92725.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/8/2022 12:48:39 PM
Sample Name : fa95742-3
Vial : P1-F9
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91510,S2Q1298,125,,,1.0,1,water

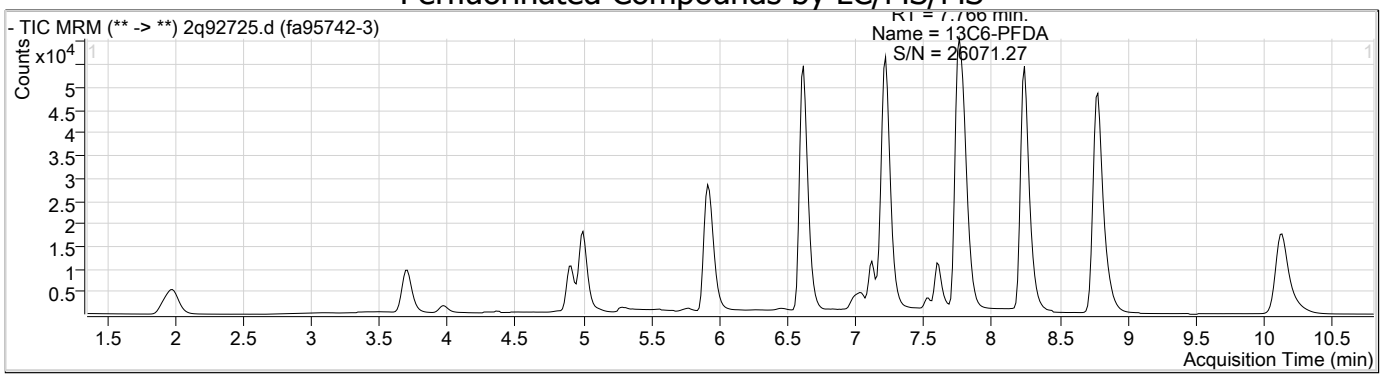
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	31021	20.00	µg/L	-0.025
M4-PFBA	1.977	217.0 -> 172.0	40469	20.00	µg/L	-0.038
M5-PFPeA	3.711	268.0 -> 223.0	43307	20.00	µg/L	-0.025
M5-PFHxA	5.002	318.0 -> 273.0	64814	20.00	µg/L	-0.025
M4-PFHpA	5.916	367.0 -> 322.0	99461	20.00	µg/L	-0.013
M8-PFOA	6.624	421.0 -> 376.0	140369	20.00	µg/L	-0.025
M9-PFNA	7.227	472.0 -> 427.0	162461	20.00	µg/L	-0.025
M6-PFDA	7.766	519.0 -> 474.0	206230	20.00	µg/L	-0.013
M7-PFUnDA	8.243	570.0 -> 525.0	243988	20.00	µg/L	-0.025
M2-PFDoDA	8.780	615.0 -> 570.0	265018	20.00	µg/L	-0.038
M2-PFTeDA	10.130	715.0 -> 670.0	129817	20.00	µg/L	-0.075
M8-FOSA	7.124	506.0 -> 78.0	35047	20.00	µg/L	-0.025
M3-PFBS	3.967	302.0 -> 99.0	5394	20.00	µg/L	-0.038
M3-PFHxS	5.936	402.0 -> 99.0	8440	20.00	µg/L	-0.031
M8-PFOS	7.212	507.0 -> 99.0	11450	20.00	µg/L	-0.013
M2-4:2FTS	4.896	329.0 -> 81.0	4868	20.00	µg/L	-0.038
M2-6:2FTS	6.608	429.0 -> 81.0	11118	20.00	µg/L	-0.025
M2-8:2FTS	7.803	529.0 -> 81.0	16817	20.00	µg/L	-0.013
M3-MeFOSAA	7.598	573.0 -> 419.0	35065	20.00	µg/L	-0.025
M3-HFPO-DA	5.294	287.0 -> 169.0	2888	20.00	µg/L	-0.025
M3-MeFOSA	7.527	515.0 -> 169.0	4624	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.896	329.0 -> 81.0	4868	10.46	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 52.3%		
13C2-6:2FTS	6.608	429.0 -> 81.0	11118	10.75	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.8%		
13C2-8:2FTS	7.803	529.0 -> 81.0	16817	11.36	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 56.8%		
13C2-PFDoDA	8.780	615.0 -> 570.0	265018	9.81	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 49.1%		
13C2-PFTeDA	10.130	715.0 -> 670.0	129817	5.22	µg/L	-0.075
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 26.1%		
13C3-PFBS	3.967	302.0 -> 99.0	5394	10.61	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.0%		
13C3-PFHxS	5.936	402.0 -> 99.0	8440	11.84	µg/L	-0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.2%		
13C4-PFBA	1.977	217.0 -> 172.0	40469	10.47	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 52.4%		
13C4-PFHpA	5.916	367.0 -> 322.0	99461	10.71	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.6%		
d5-EtFOSAA	7.735	589.0 -> 419.0	31021	10.22	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 51.1%		
13C5-PFHxA	5.002	318.0 -> 273.0	64814	9.60	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 48.0%		
13C5-PFPeA	3.711	268.0 -> 223.0	43307	9.50	µg/L	-0.025

Perfluorinated Compounds by LC/MS/MS

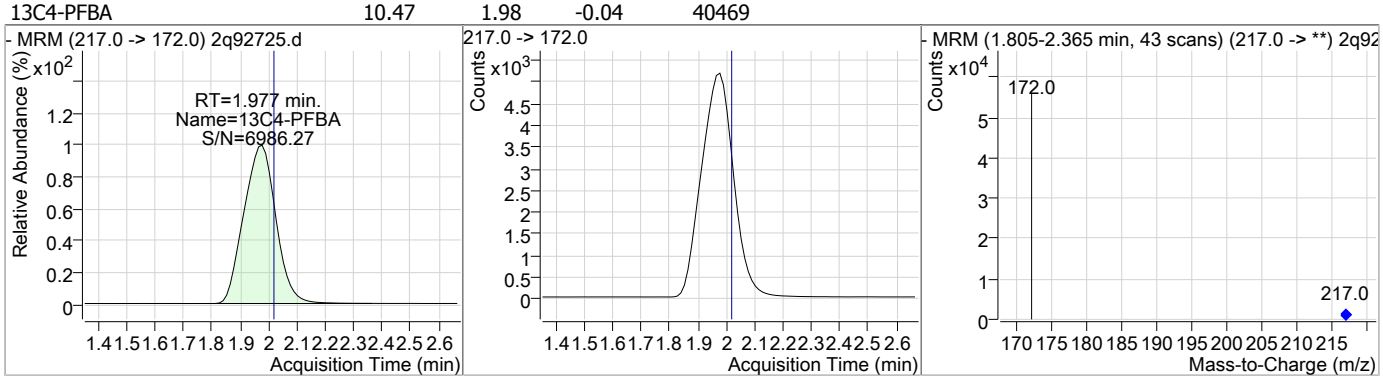
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 47.5%			
13C6-PFDA	7.766	519.0 -> 474.0	206230	11.32	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 56.6%			
13C7-PFUnDA	8.243	570.0 -> 525.0	243988	10.78	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.9%			
13C8-FOSA	7.124	506.0 -> 78.0	35047	9.52	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 47.6%			
13C8-PFOA	6.624	421.0 -> 376.0	140369	10.90	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 54.5%			
13C8-PFOS	7.212	507.0 -> 99.0	11450	11.03	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 55.2%			
13C9-PFNA	7.227	472.0 -> 427.0	162461	11.14	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 55.7%			
d3-MeFOSAA	7.598	573.0 -> 419.0	35065	9.14	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.7%			
13C3-HFPO-DA	5.294	287.0 -> 169.0	2888	11.09	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 55.5%			
d3-MeFOSA	7.527	515.0 -> 169.0	4624	3.30	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.5%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.971	213.0 -> 169.0	1985	1.91	µg/L	m	100
PFBS	3.969	299.0 -> 80.0	1350	1.50	µg/L		97
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.905	363.0 -> 319.0	6984	0.86	µg/L	m	99
PFHpS	6.620	449.0 -> 80.0	1186	1.20	µg/L	m	97
PFHxA	5.003	313.0 -> 269.0	9695	4.04	µg/L		97
PFHxS	5.937	399.0 -> 80.0	21740	20.52	µg/L	m	96
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.624	413.0 -> 369.0	12688	1.66	µg/L	m	95
PFOS	7.200	499.0 -> 80.0	72308	72.14	µg/L	m	98
PFPeA	3.701	263.0 -> 219.0	5122	1.54	µg/L		100
PFPeS	5.107	349.0 -> 80.0	1256	2.04	µg/L	m	90
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

= Qualifier out of range, m = manually integrated, + = Area summed

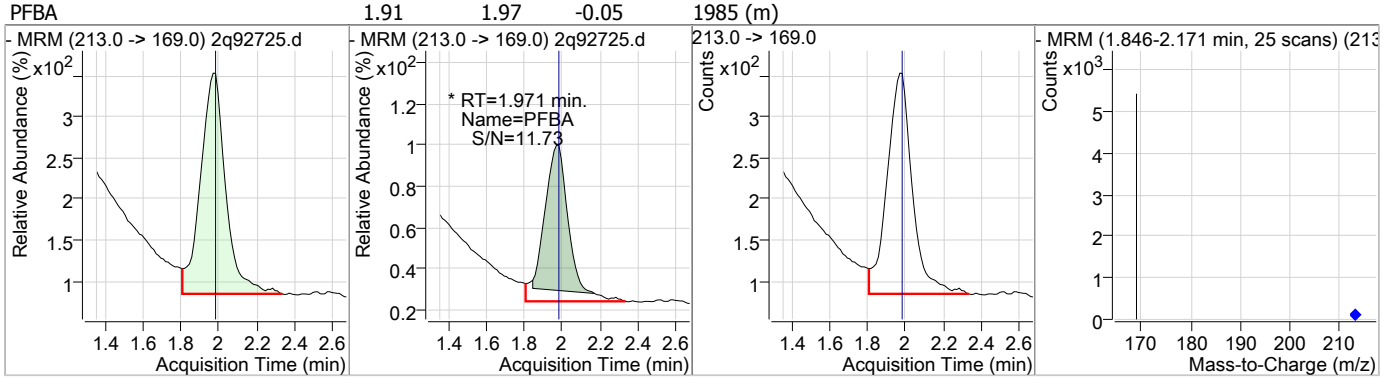
Perfluorinated Compounds by LC/MS/MS



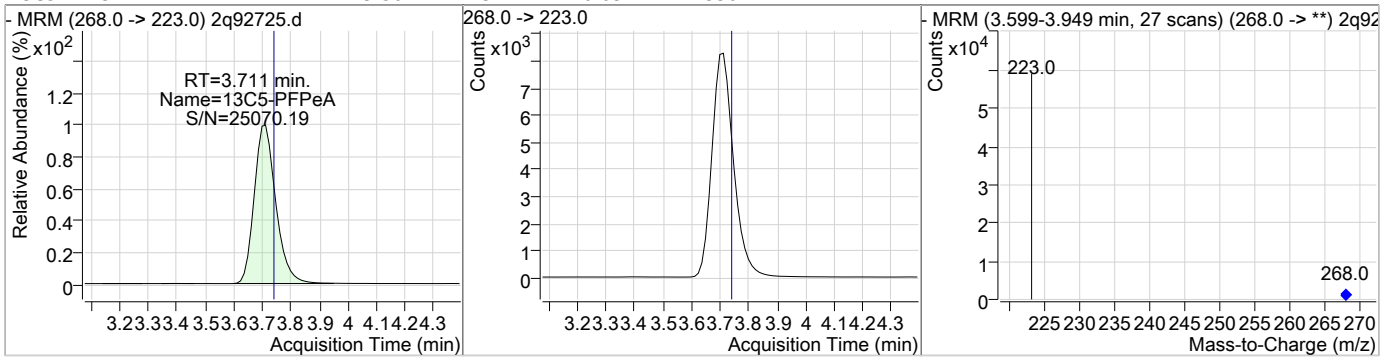
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	10.47	1.98	-0.04	40469				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.91	1.97	-0.05	1985 (m)				

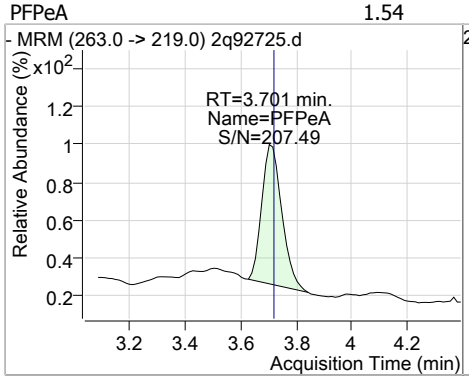


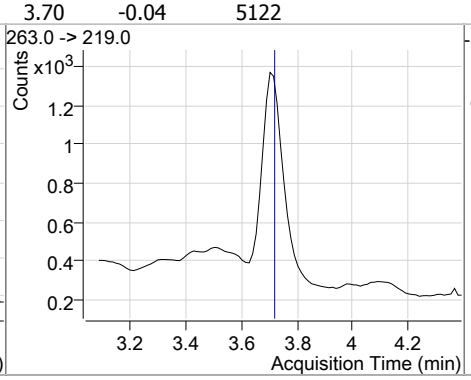
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	9.50	3.71	-0.03	43307				

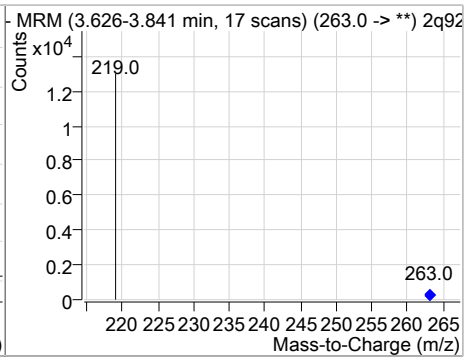


Perfluorinated Compounds by LC/MS/MS

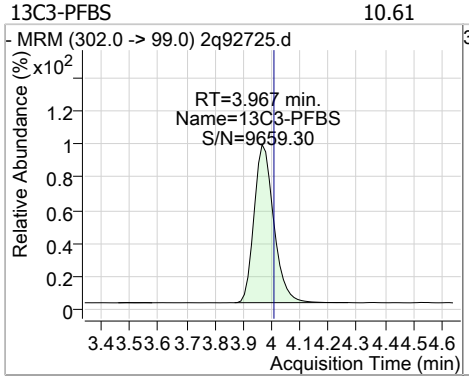
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.54	3.70	-0.04	5122				

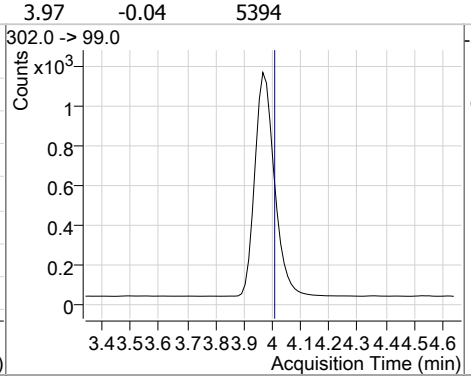


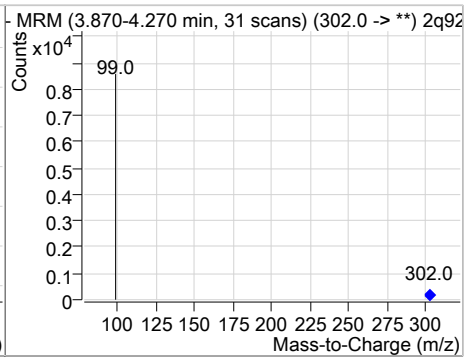




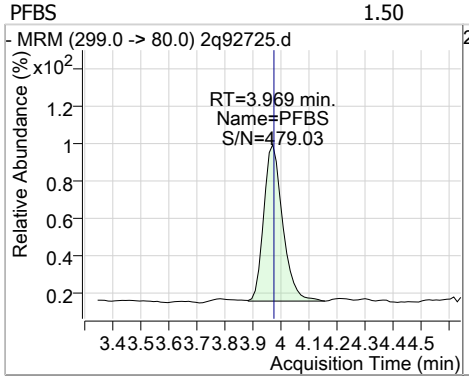
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	10.61	3.97	-0.04	5394				

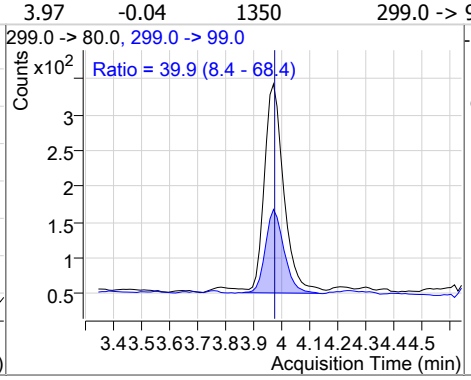


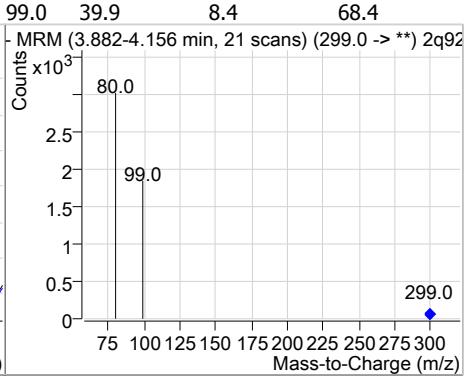




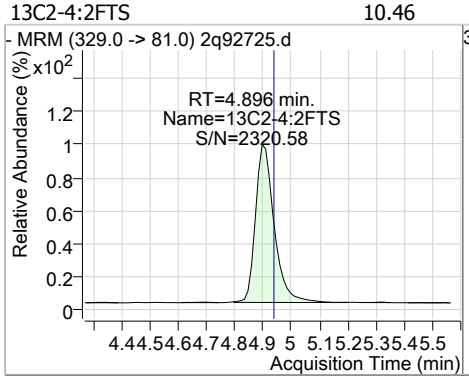
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.50	3.97	-0.04	1350	299.0 -> 99.0	39.9	8.4	68.4

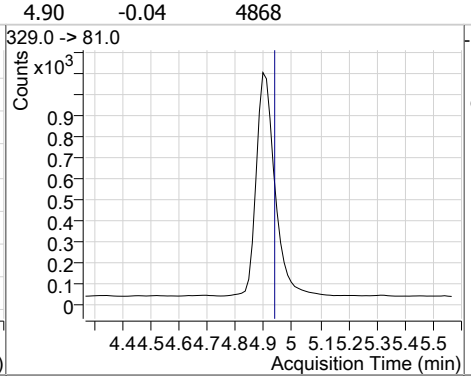


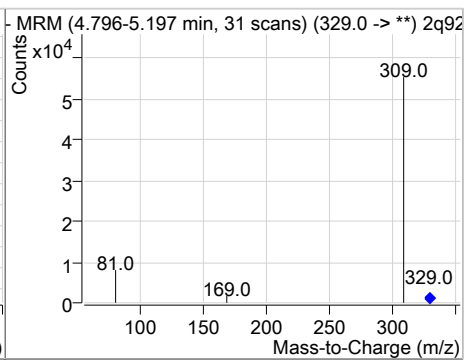




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	10.46	4.90	-0.04	4868				

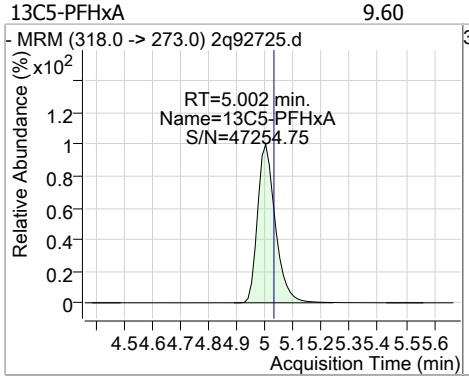


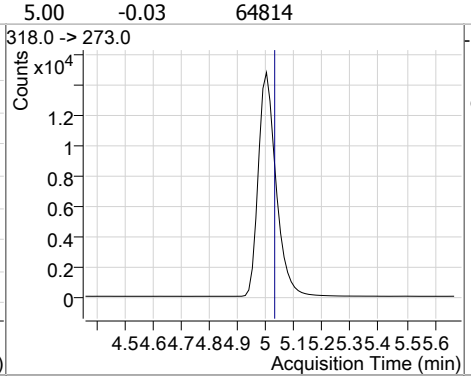


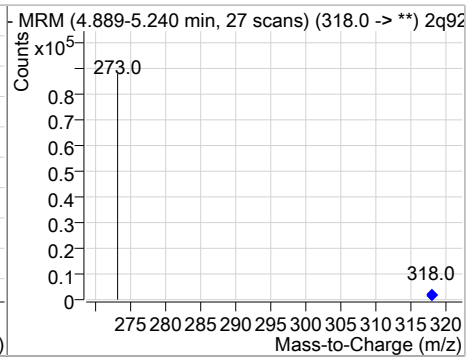


Perfluorinated Compounds by LC/MS/MS

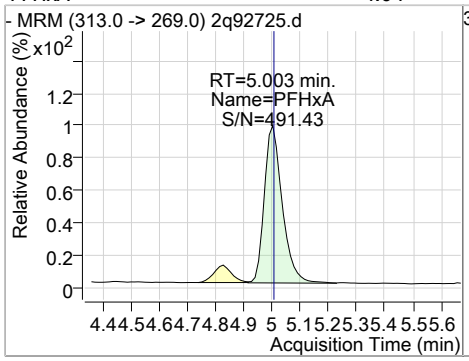
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	9.60	5.00	-0.03	64814				

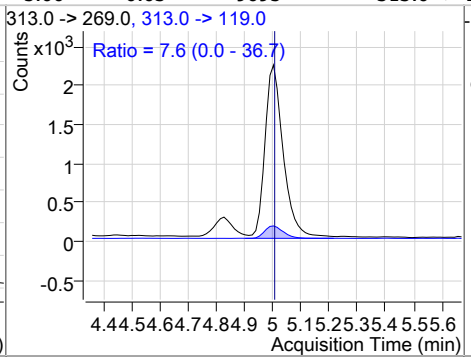


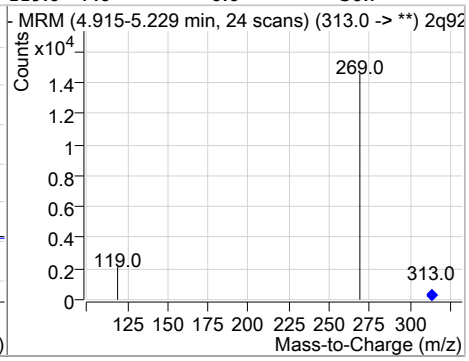




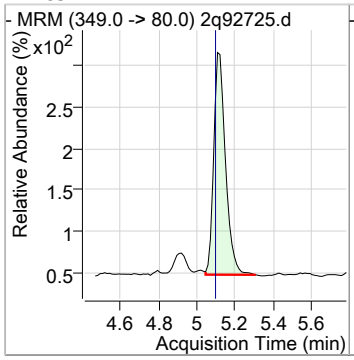
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.04	5.00	-0.03	9695	313.0 -> 119.0	7.6	0.0	36.7

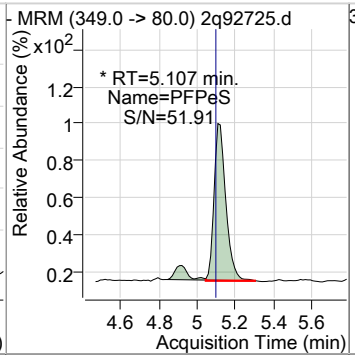


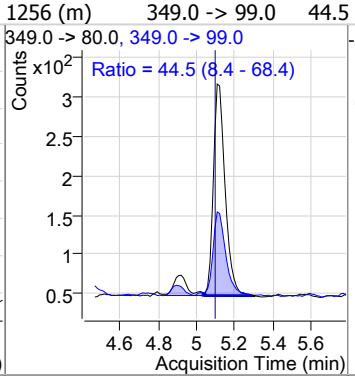


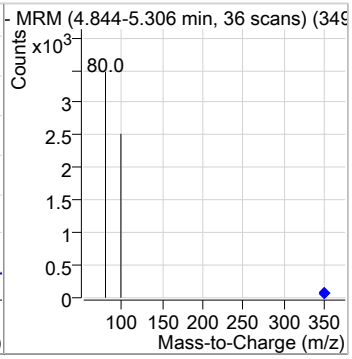


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.04	5.11	-0.04	1256 (m)	349.0 -> 99.0	44.5	8.4	68.4

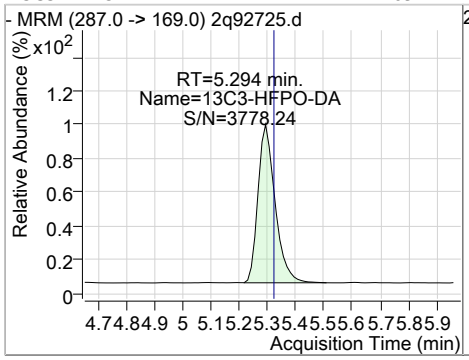


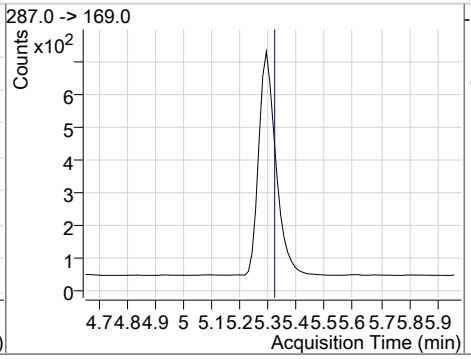


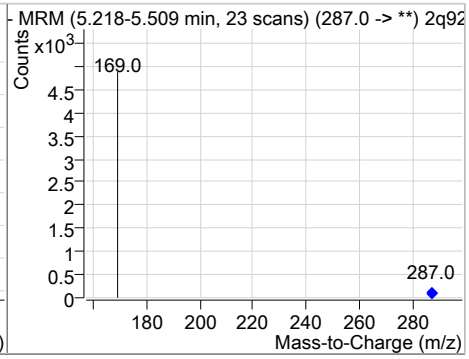




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.09	5.29	-0.03	2888				

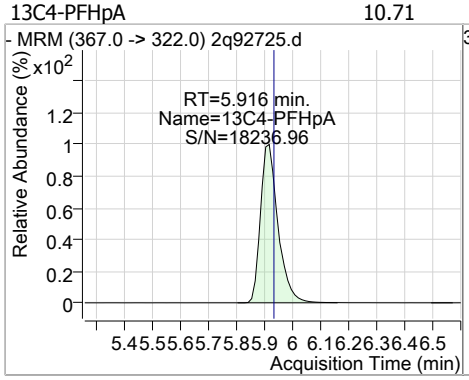


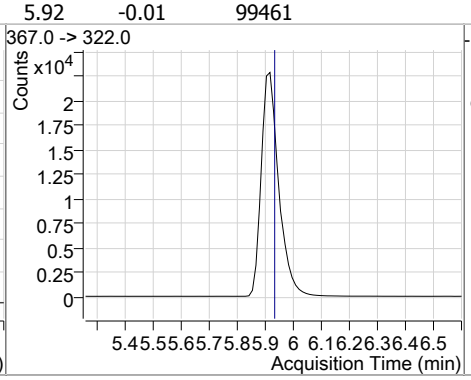


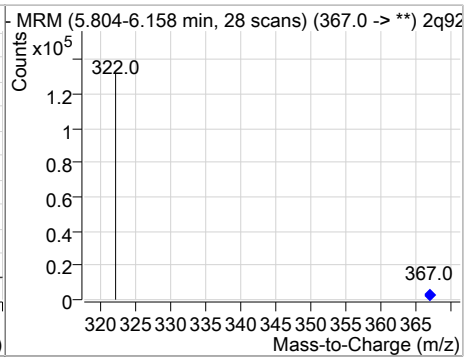


Perfluorinated Compounds by LC/MS/MS

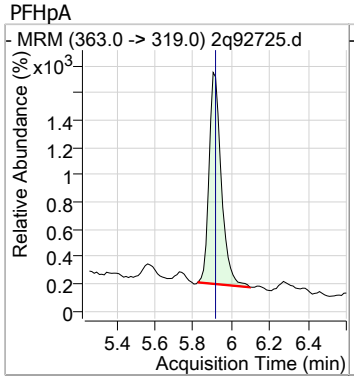
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	10.71	5.92	-0.01	99461				

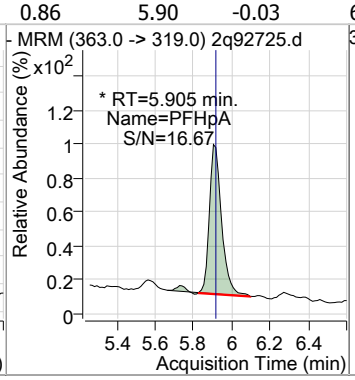


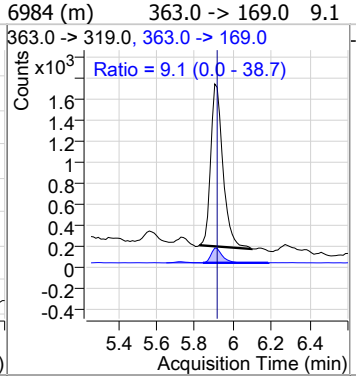


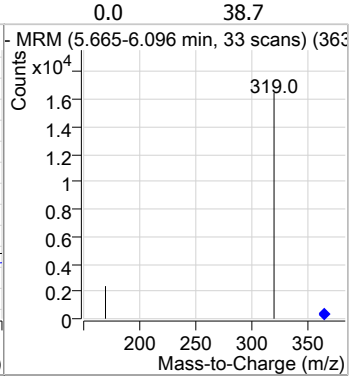


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.86	5.90	-0.03	6984 (m)	363.0 -> 169.0	9.1	0.0	38.7

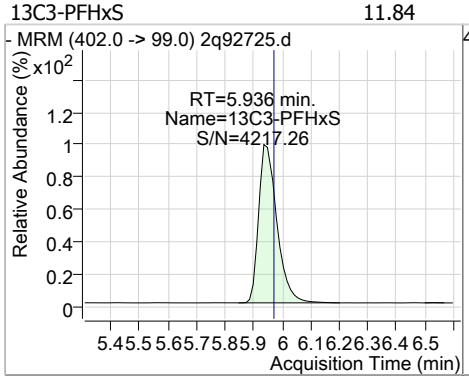


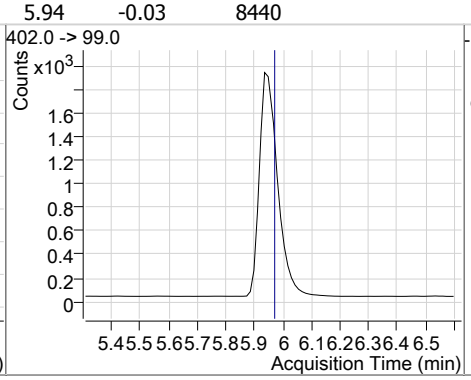


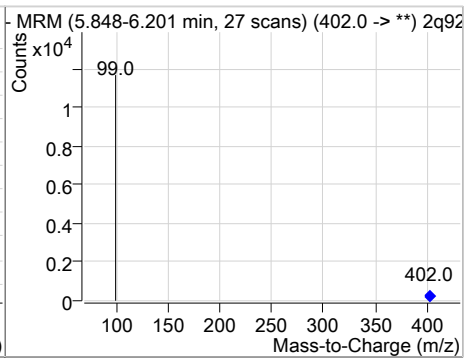




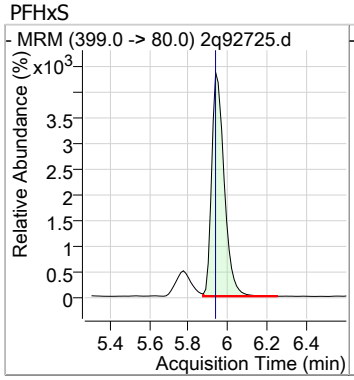
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	11.84	5.94	-0.03	8440				

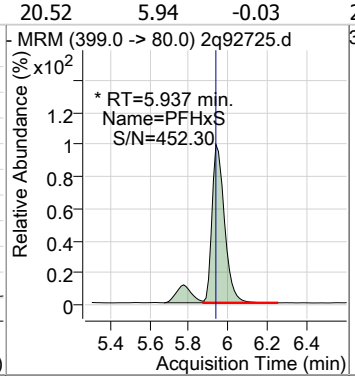


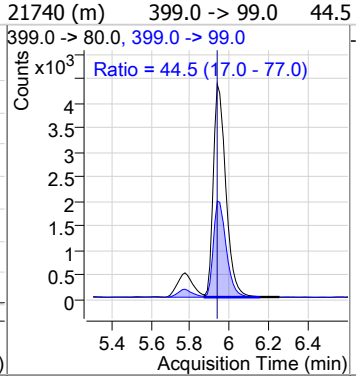


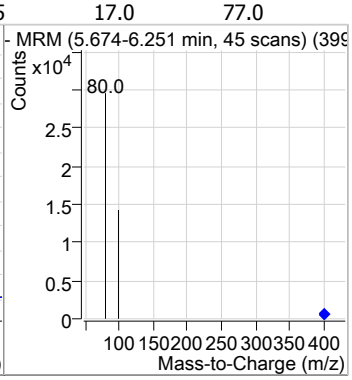


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.52	5.94	-0.03	21740 (m)	399.0 -> 99.0	44.5	17.0	77.0



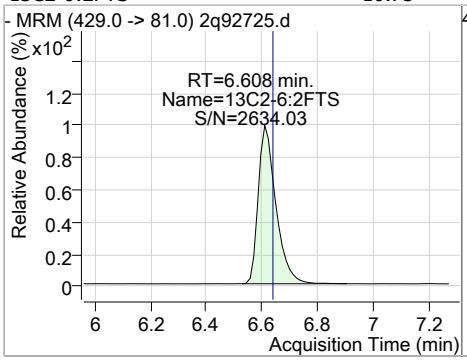


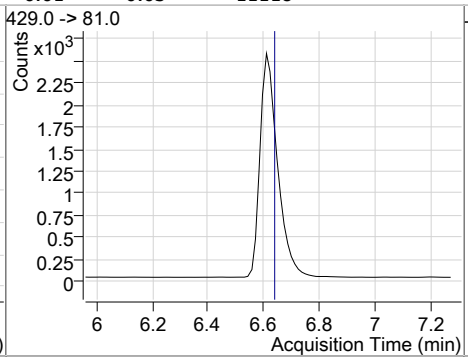


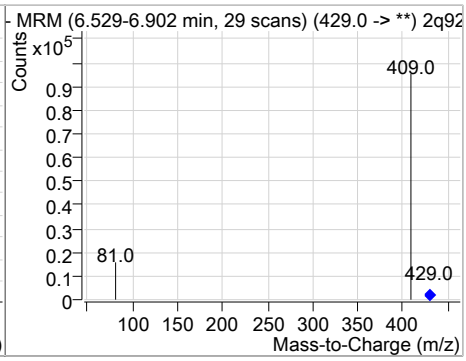


Perfluorinated Compounds by LC/MS/MS

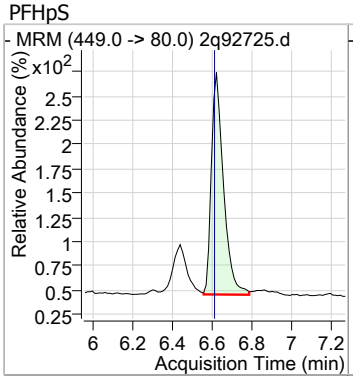
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	10.75	6.61	-0.03	11118				

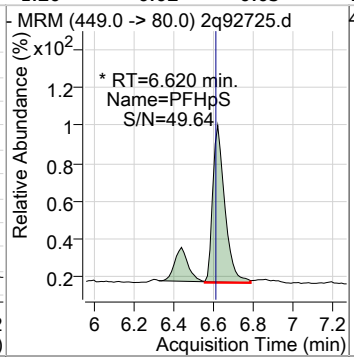


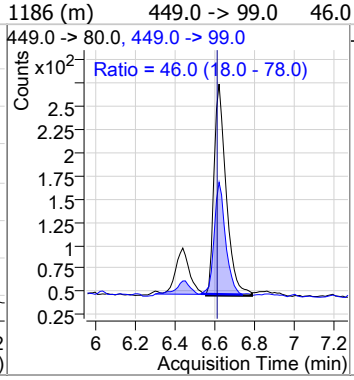


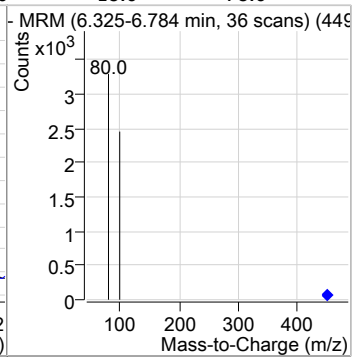


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.20	6.62	-0.03	1186 (m)	449.0 -> 99.0	46.0	18.0	78.0

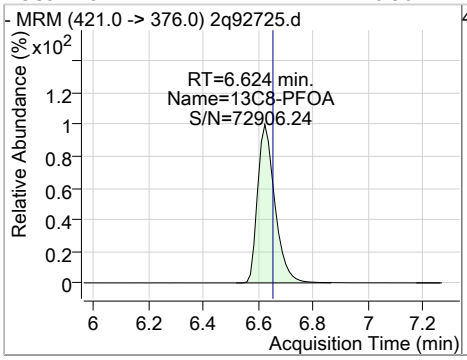


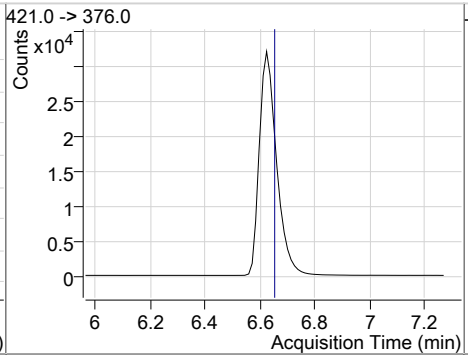


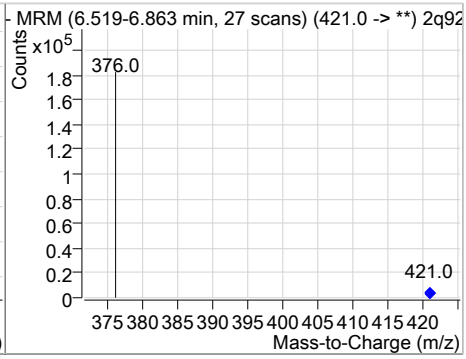




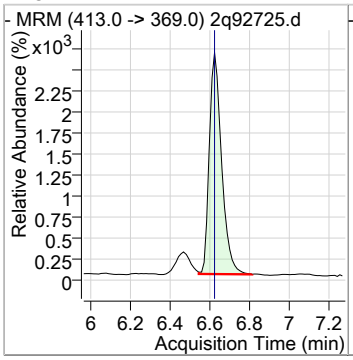
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	10.90	6.62	-0.03	140369				

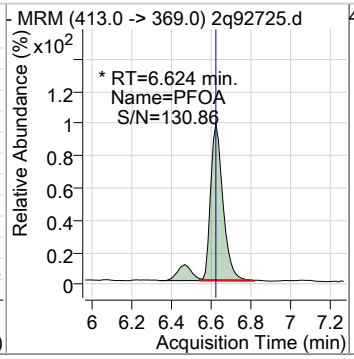


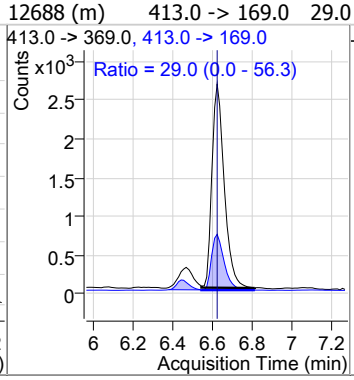


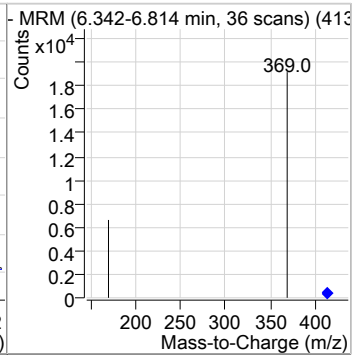


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.66	6.62	-0.03	12688 (m)	413.0 -> 169.0	29.0	0.0	56.3



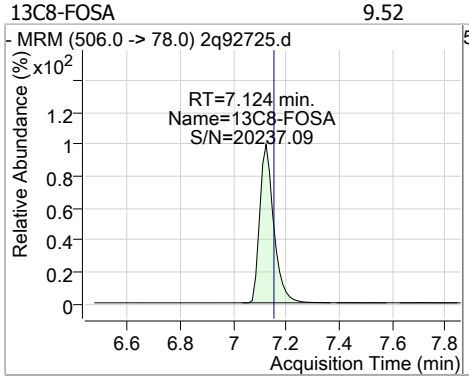


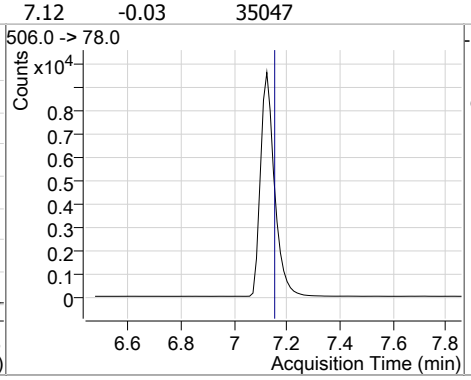


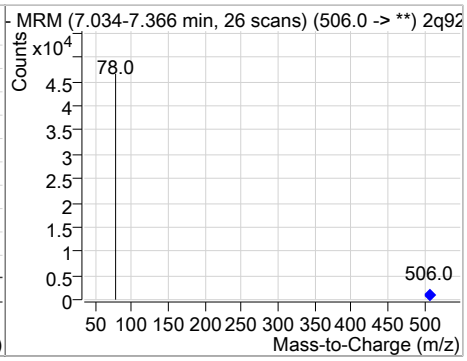


Perfluorinated Compounds by LC/MS/MS

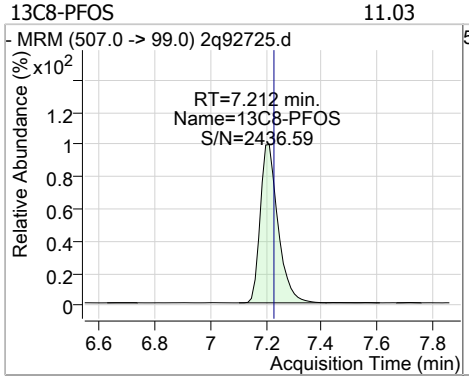
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	9.52	7.12	-0.03	35047				

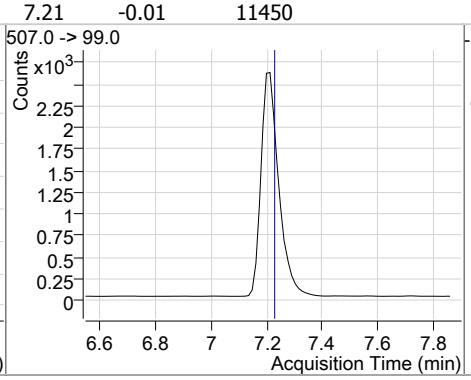


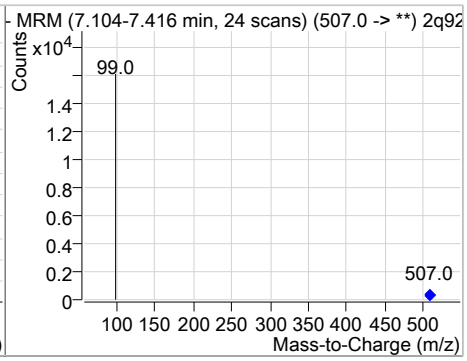




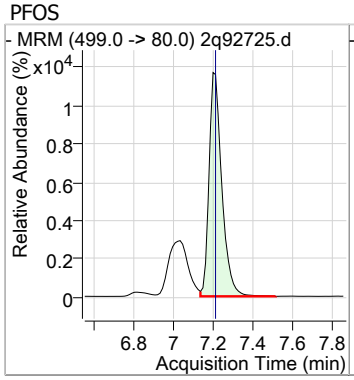
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	11.03	7.21	-0.01	11450				

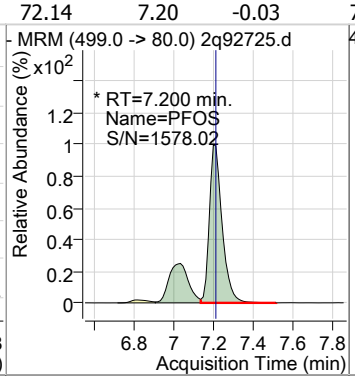


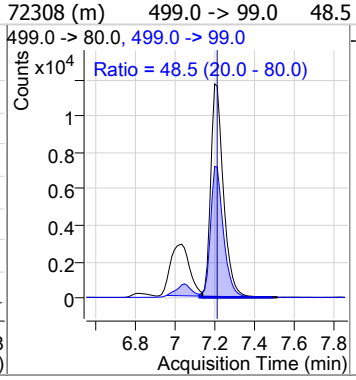


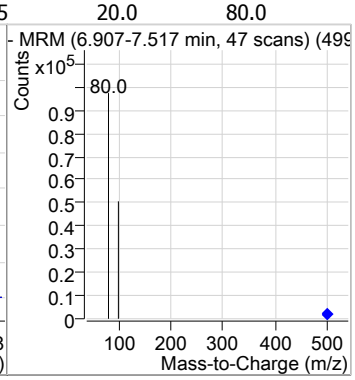


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	72.14	7.20	-0.03	72308 (m)	499.0 -> 99.0	48.5	20.0	80.0

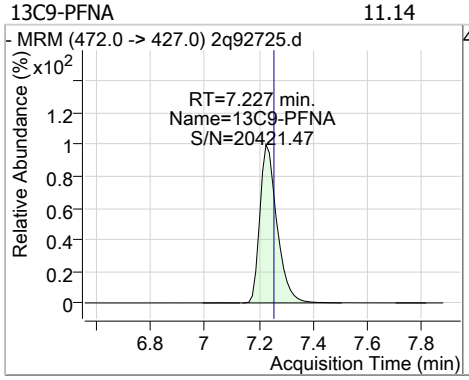


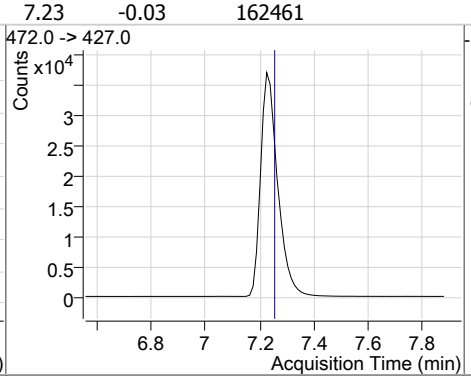


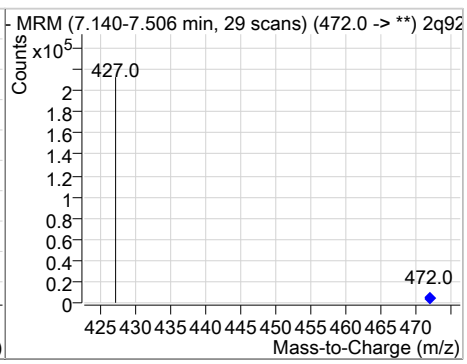




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	11.14	7.23	-0.03	162461				

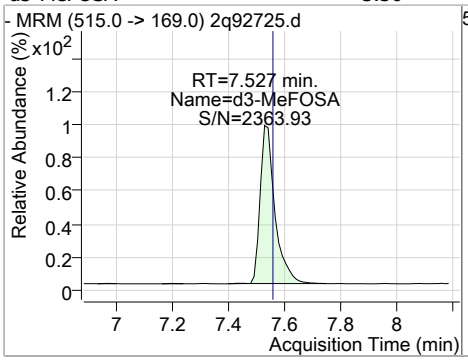


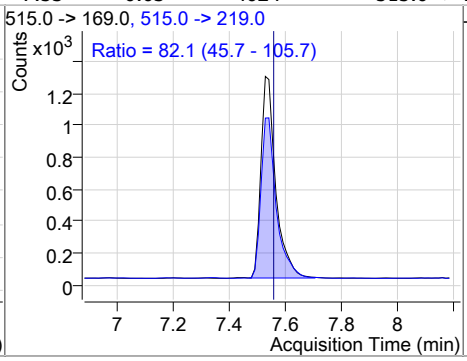


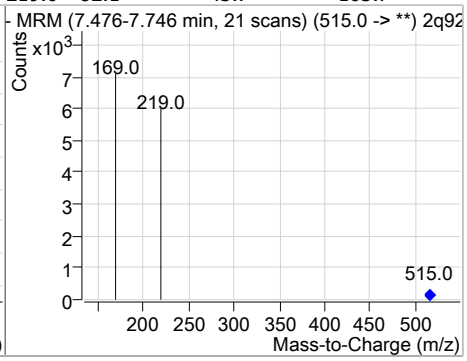


Perfluorinated Compounds by LC/MS/MS

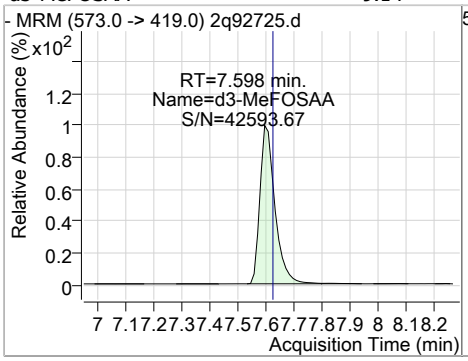
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	3.30	7.53	-0.03	4624	515.0 -> 219.0	82.1	45.7	105.7

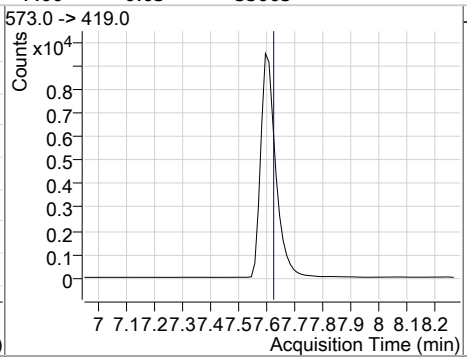


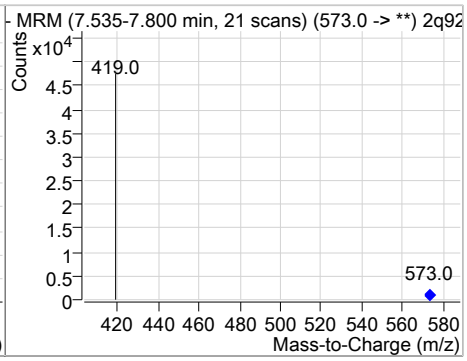




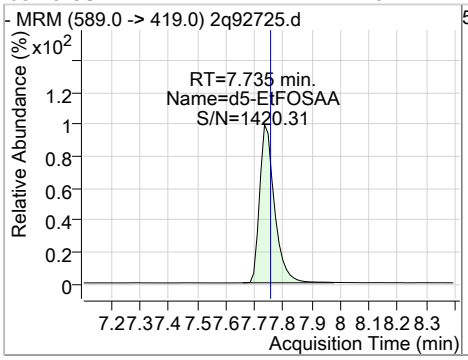
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	9.14	7.60	-0.03	35065				

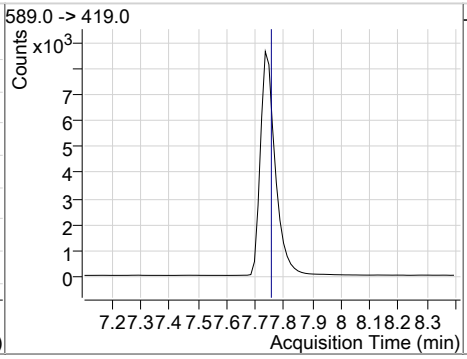


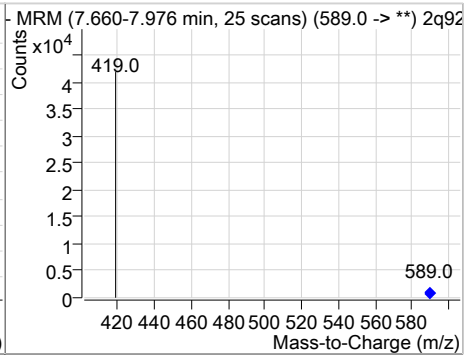




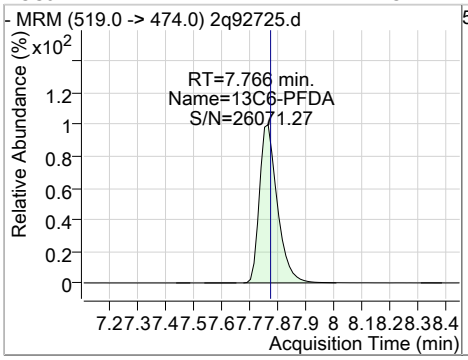
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	10.22	7.74	-0.03	31021				

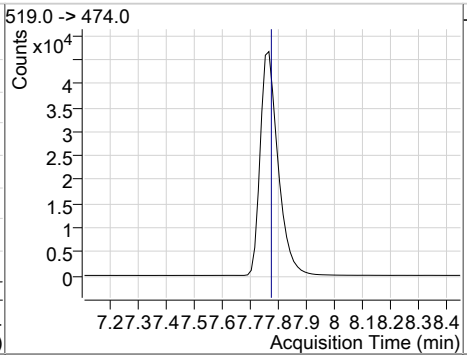


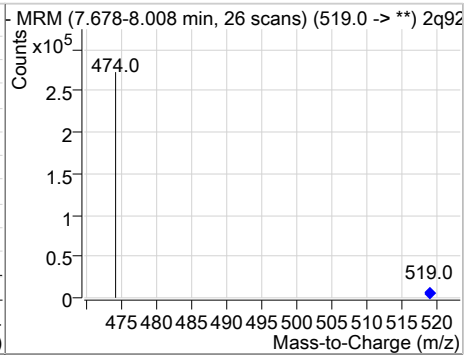




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	11.32	7.77	-0.01	206230				

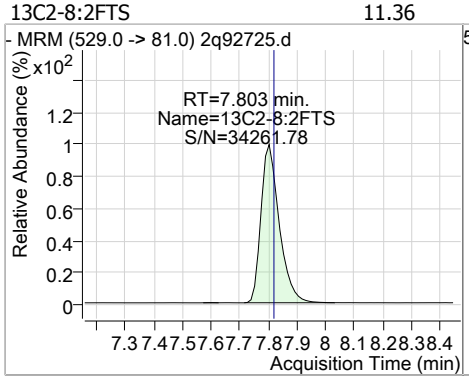


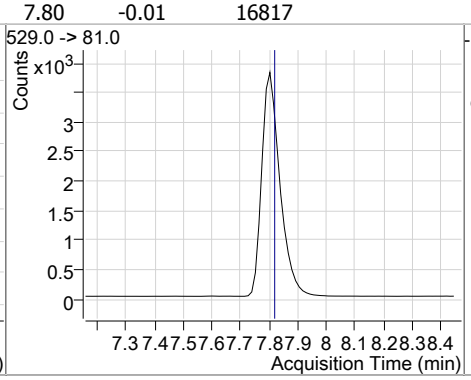


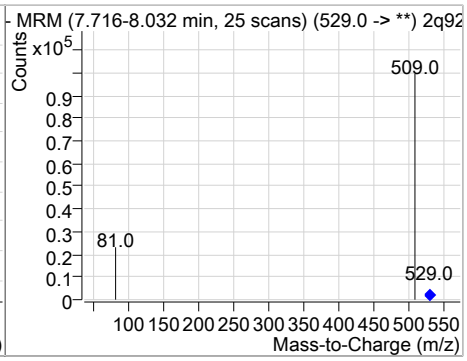


Perfluorinated Compounds by LC/MS/MS

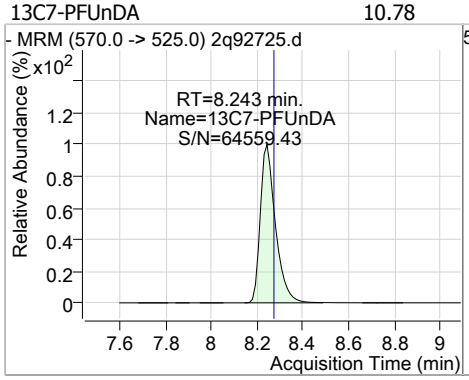
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.36	7.80	-0.01	16817				

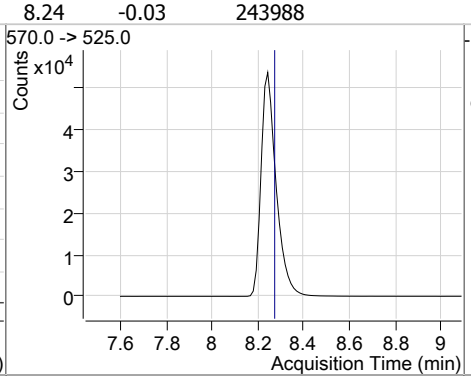


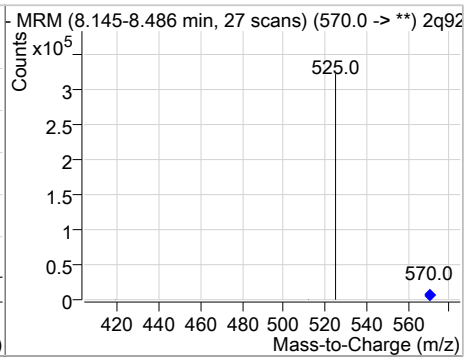




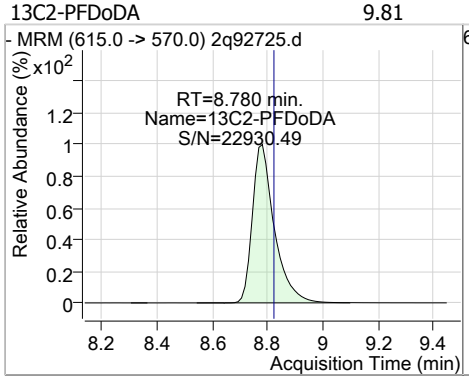
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	10.78	8.24	-0.03	243988				

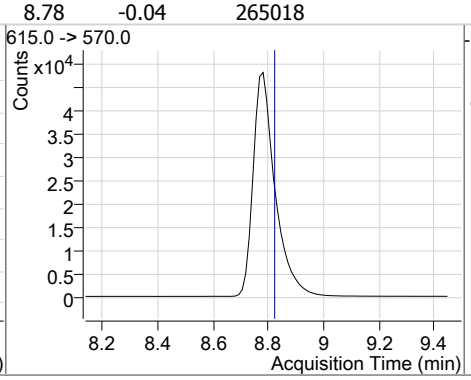


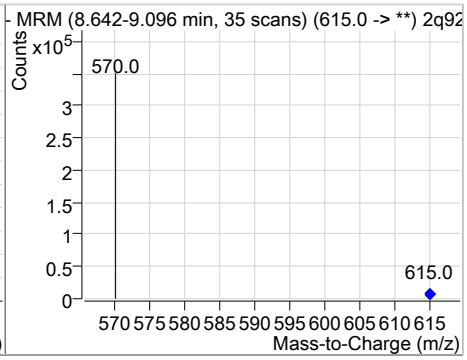




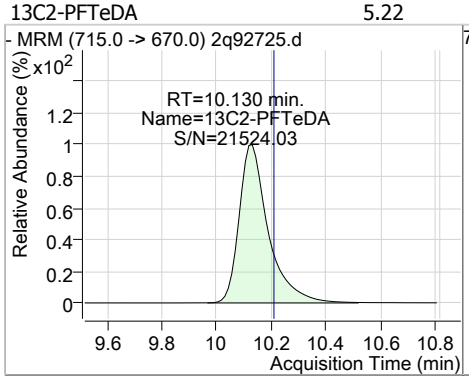
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	9.81	8.78	-0.04	265018				

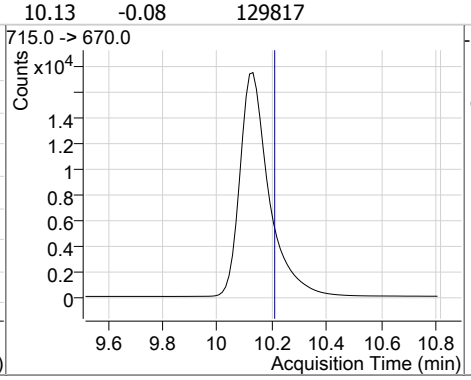


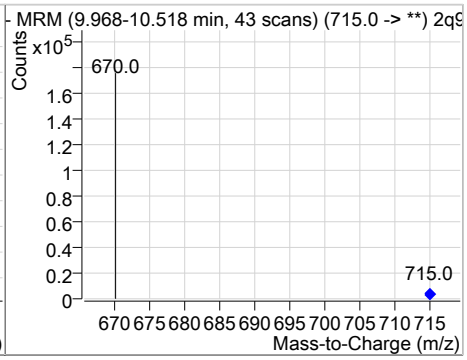




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	5.22	10.13	-0.08	129817				







Manual Integration Approval Summary

Sample Number: FA95742-3
Lab FileID: 2Q92725.D
Injection Time: 06/08/22 12:48
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:07 Natasha Gumtie
Supervisor approved: 06/08/22 15:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		1.97	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		5.11	Split peak
Perfluoroheptanoic acid	375-85-9		5.91	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.62	Split peak
Perfluorooctanoic acid	335-67-1		6.62	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92329.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 10:24:05 PM
Sample Name : FA95742-4
Vial : P6-C2
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

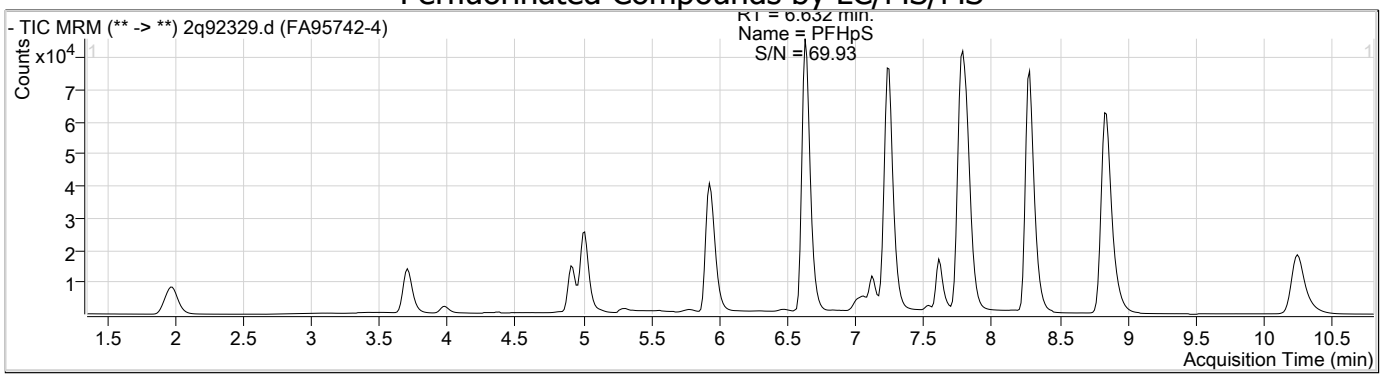
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	45110	20.00	µg/L	-0.013
M4-PFBA	1.964	217.0 -> 172.0	55725	20.00	µg/L	-0.050
M5-PFPeA	3.711	268.0 -> 223.0	60558	20.00	µg/L	-0.025
M5-PFHxA	5.014	318.0 -> 273.0	93820	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	145904	20.00	µg/L	0.000
M8-PFOA	6.636	421.0 -> 376.0	216317	20.00	µg/L	-0.013
M9-PFNA	7.252	472.0 -> 427.0	238119	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	299121	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	343635	20.00	µg/L	0.013
M2-PFDoDA	8.832	615.0 -> 570.0	358786	20.00	µg/L	0.014
M2-PFTeDA	10.243	715.0 -> 670.0	135967	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	33377	20.00	µg/L	-0.025
M3-PFBS	3.979	302.0 -> 99.0	7440	20.00	µg/L	-0.025
M3-PFHxS	5.967	402.0 -> 99.0	11313	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	16496	20.00	µg/L	0.000
M2-4:2FTS	4.909	329.0 -> 81.0	6815	20.00	µg/L	-0.025
M2-6:2FTS	6.634	429.0 -> 81.0	17302	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	23263	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	55121	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	3739	20.00	µg/L	-0.013
M3-MeFOSA	7.539	515.0 -> 169.0	3041	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	6815	14.65	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%		
13C2-6:2FTS	6.634	429.0 -> 81.0	17302	16.73	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.6%		
13C2-8:2FTS	7.828	529.0 -> 81.0	23263	15.71	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C2-PFDoDA	8.832	615.0 -> 570.0	358786	13.28	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.4%		
13C2-PFTeDA	10.243	715.0 -> 670.0	135967	5.46	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 27.3%		
13C3-PFBS	3.979	302.0 -> 99.0	7440	14.63	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%		
13C3-PFHxS	5.967	402.0 -> 99.0	11313	15.87	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%		
13C4-PFBA	1.964	217.0 -> 172.0	55725	14.42	µg/L	-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.1%		
13C4-PFHpA	5.929	367.0 -> 322.0	145904	15.71	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.6%		
d5-EtFOSAA	7.748	589.0 -> 419.0	45110	14.86	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.3%		
13C5-PFHxA	5.014	318.0 -> 273.0	93820	13.89	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.5%		
13C5-PFPeA	3.711	268.0 -> 223.0	60558	13.29	µg/L	-0.025

Perfluorinated Compounds by LC/MS/MS

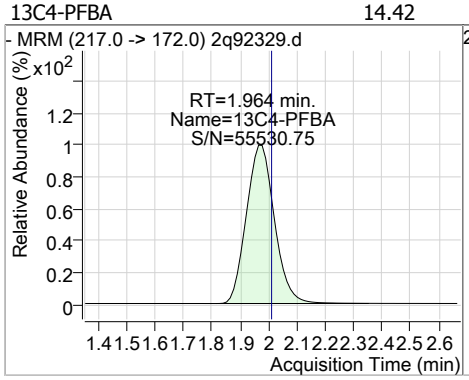
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.4%			
13C6-PFDA	7.779	519.0 -> 474.0	299121	16.42	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%			
13C7-PFUnDA	8.282	570.0 -> 525.0	343635	15.19	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%			
13C8-FOSA	7.124	506.0 -> 78.0	33377	9.07	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.3%			
13C8-PFOA	6.636	421.0 -> 376.0	216317	16.80	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%			
13C8-PFOS	7.225	507.0 -> 99.0	16496	15.90	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%			
13C9-PFNA	7.252	472.0 -> 427.0	238119	16.33	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%			
d3-MeFOSAA	7.610	573.0 -> 419.0	55121	14.37	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.9%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	3739	14.36	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%			
d3-MeFOSA	7.539	515.0 -> 169.0	3041	2.17	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 10.9%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.971	213.0 -> 169.0	2310	1.62	µg/L		100
PFBS	3.969	299.0 -> 80.0	1582	1.28	µg/L		98
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.930	363.0 -> 319.0	8804	0.74	µg/L	m	99
PFHpS	6.632	449.0 -> 80.0	1376	1.03	µg/L	m	93
PFHxA	5.015	313.0 -> 269.0	12009	3.46	µg/L		99
PFHxS	5.949	399.0 -> 80.0	25455	17.93	µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.637	413.0 -> 369.0	16646	1.42	µg/L	m	95
PFOS	7.225	499.0 -> 80.0	85996	59.55	µg/L	m	97
PFPeA	3.714	263.0 -> 219.0	7159	1.54	µg/L		100
PFPeS	5.120	349.0 -> 80.0	1537	1.81	µg/L	m	98
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

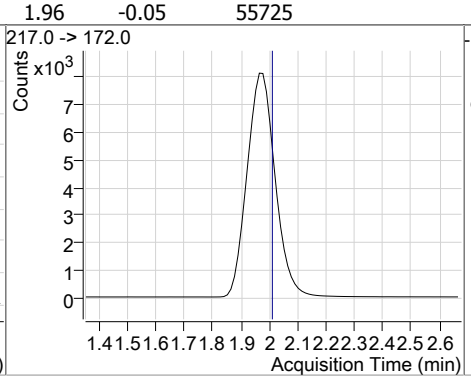
= Qualifier out of range, m = manually integrated, + = Area summed

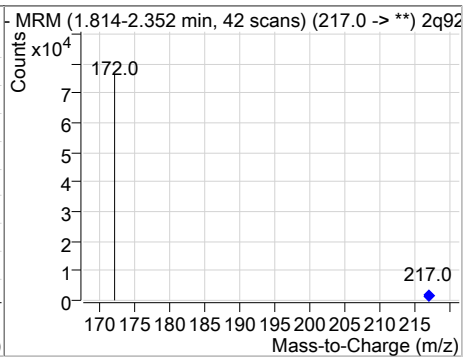
Perfluorinated Compounds by LC/MS/MS



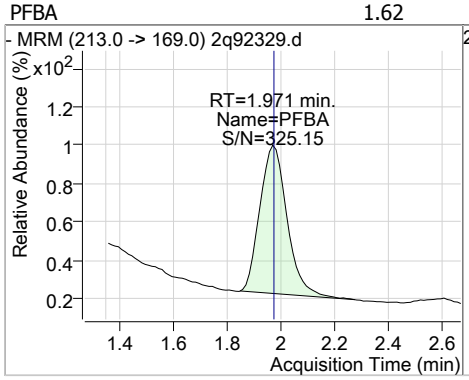
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	14.42	1.96	-0.05	55725				

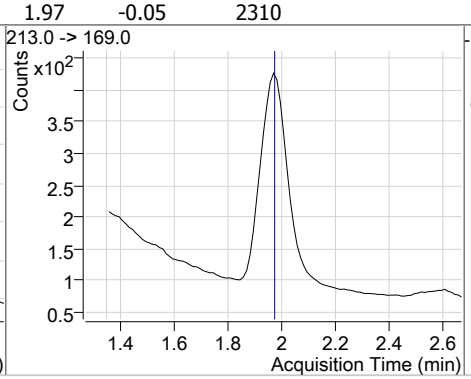


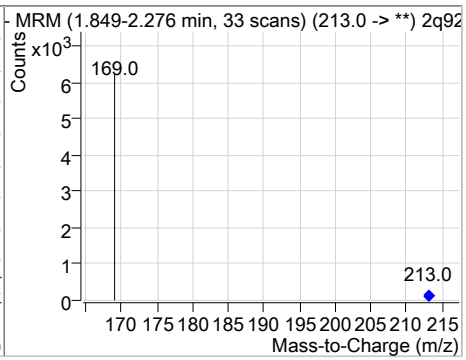




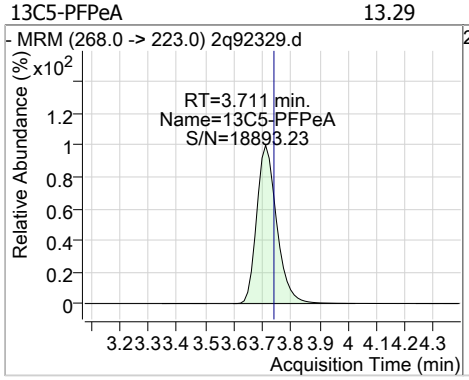
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.62	1.97	-0.05	2310				

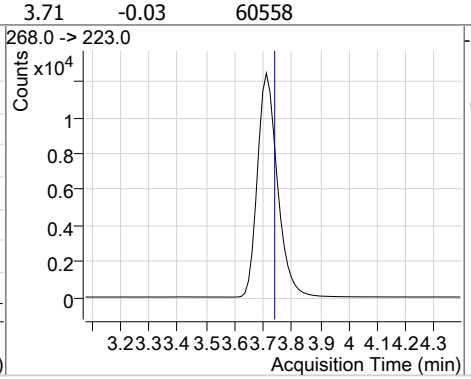


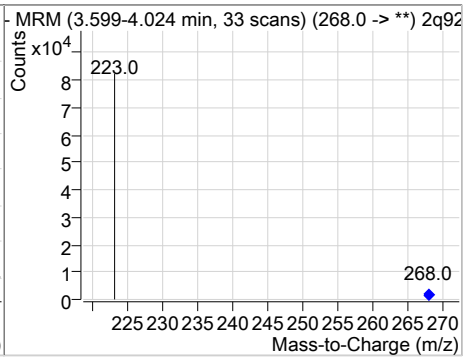




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.29	3.71	-0.03	60558				

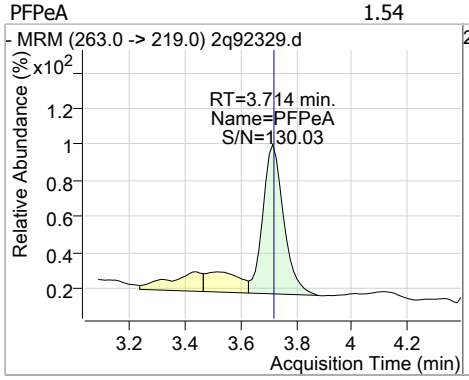


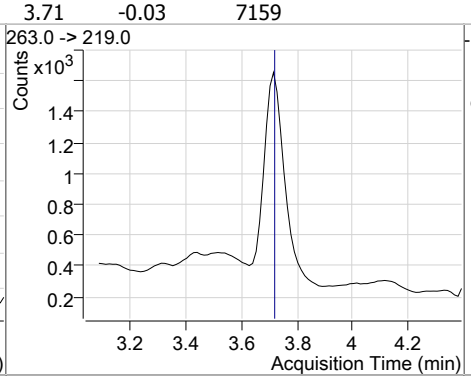


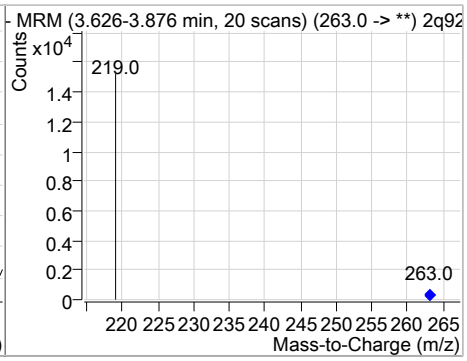


Perfluorinated Compounds by LC/MS/MS

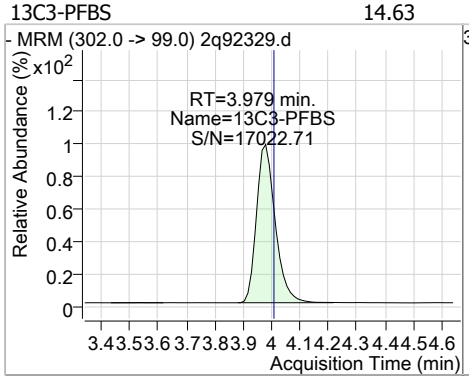
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.54	3.71	-0.03	7159				

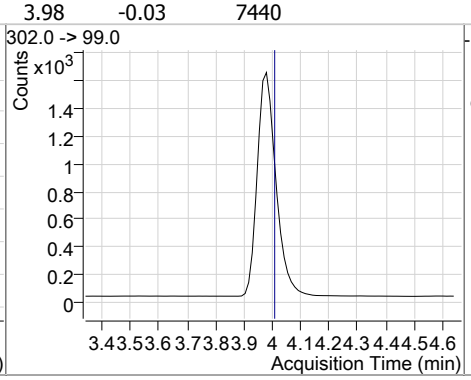


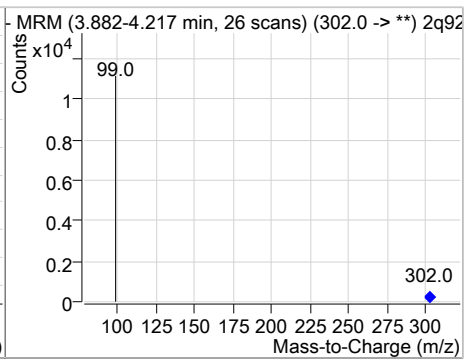




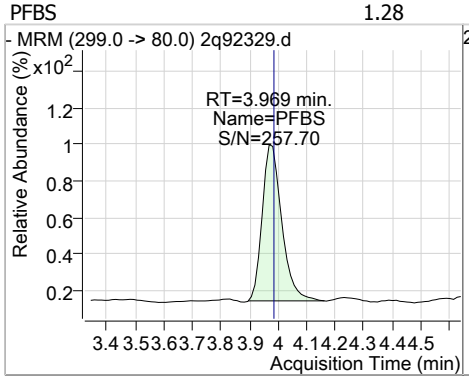
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.63	3.98	-0.03	7440				

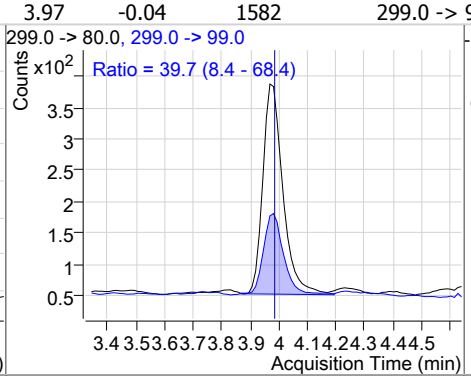


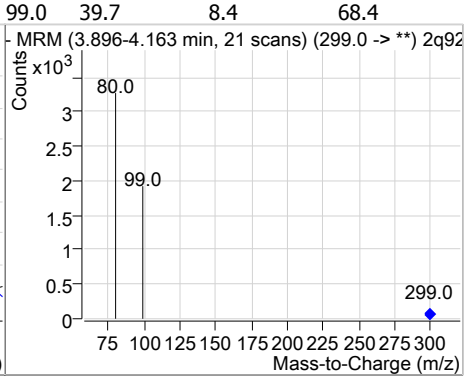




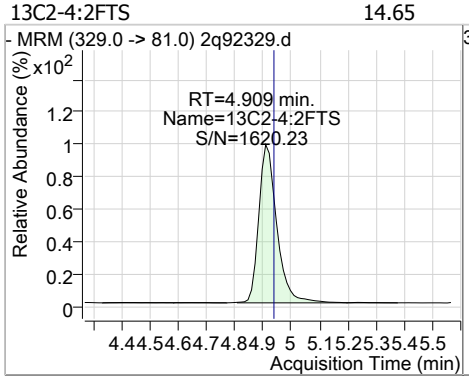
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.28	3.97	-0.04	1582	299.0 -> 99.0	39.7	8.4	68.4

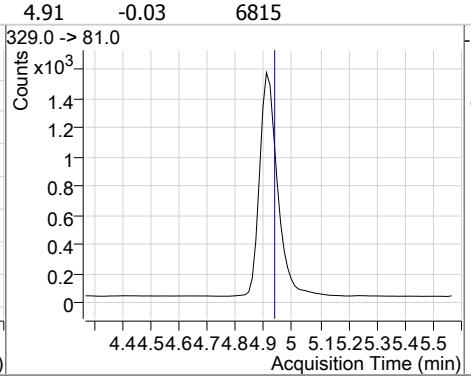


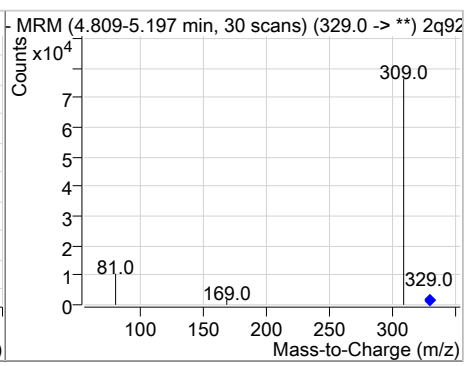




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.65	4.91	-0.03	6815				

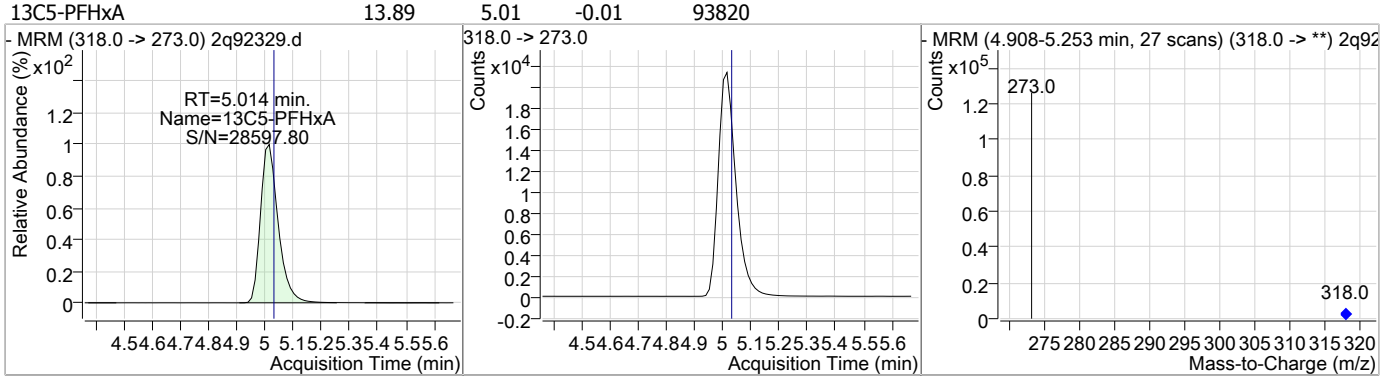




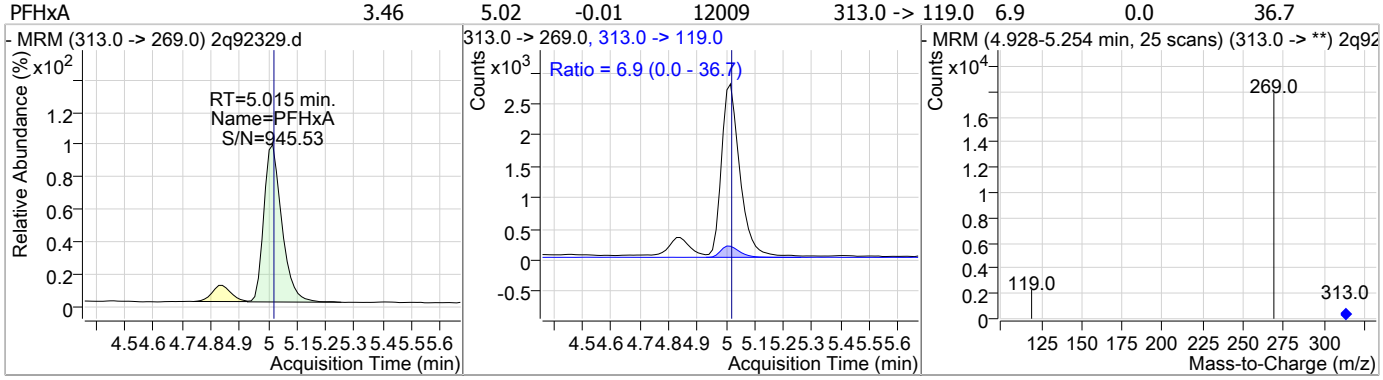


Perfluorinated Compounds by LC/MS/MS

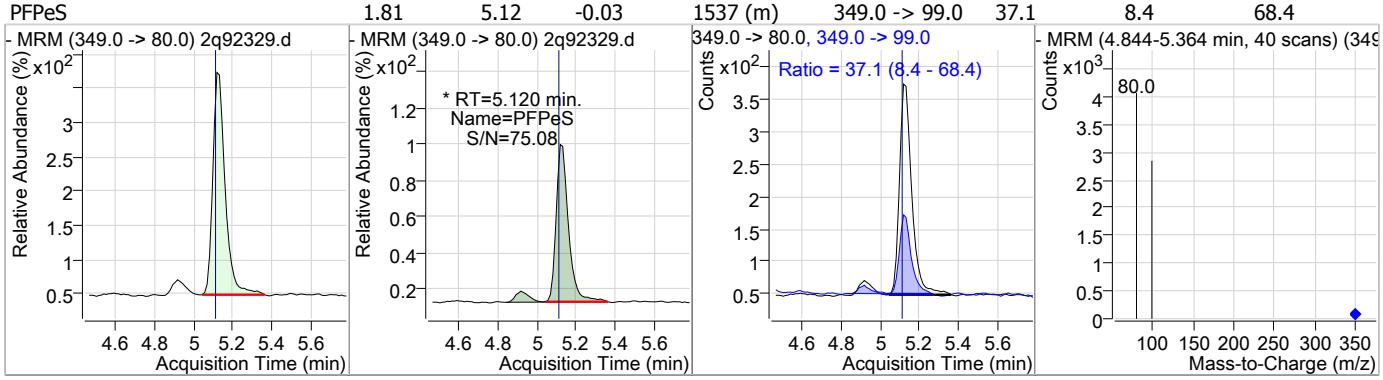
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.89	5.01	-0.01	93820				



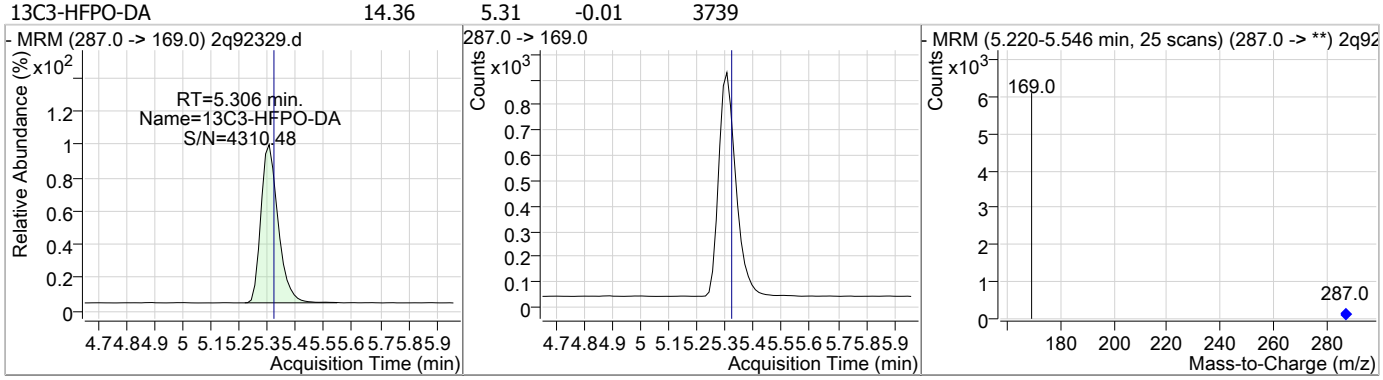
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	3.46	5.02	-0.01	12009	313.0 -> 119.0	6.9	0.0	36.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.81	5.12	-0.03	1537 (m)	349.0 -> 99.0	37.1	8.4	68.4

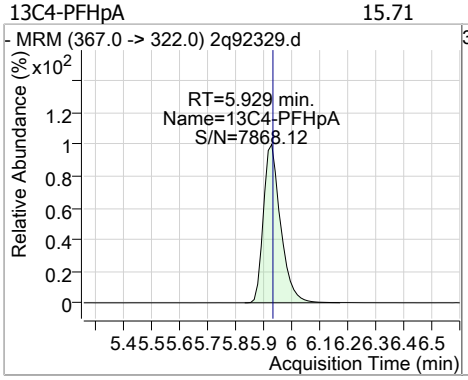


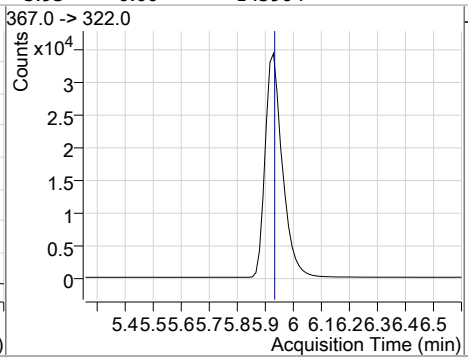
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	14.36	5.31	-0.01	3739				

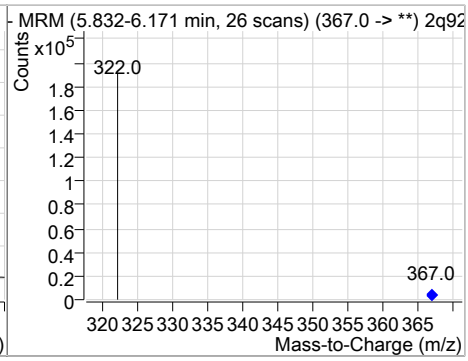


Perfluorinated Compounds by LC/MS/MS

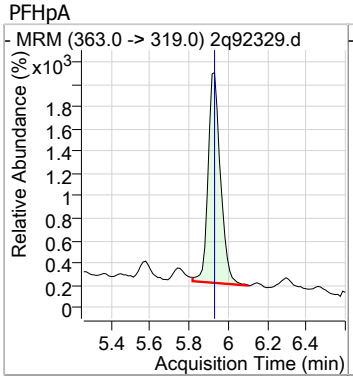
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.71	5.93	0.00	145904				

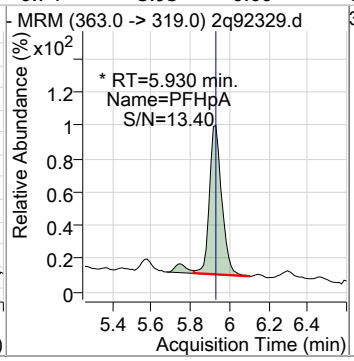


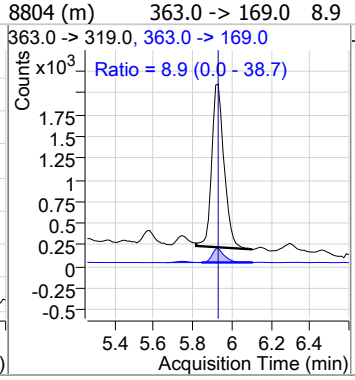


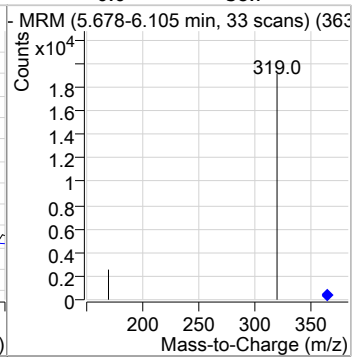


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.74	5.93	0.00	8804 (m)	363.0 -> 169.0	8.9	0.0	38.7

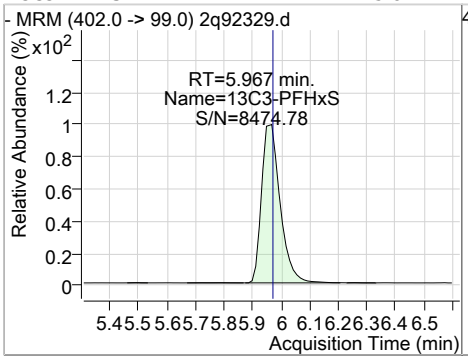


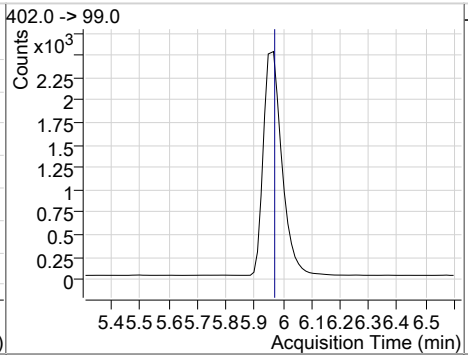


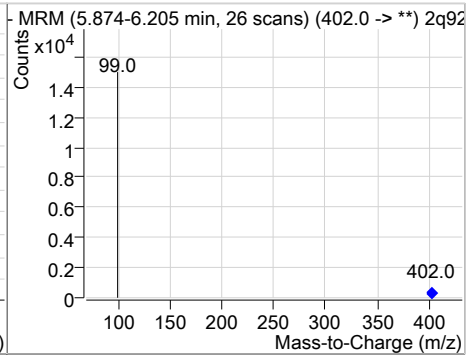




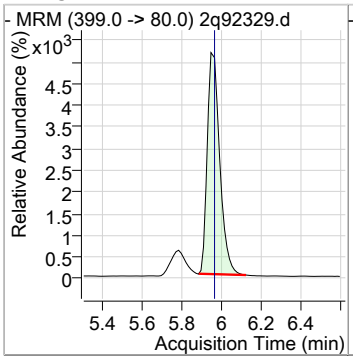
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.87	5.97	0.00	11313				

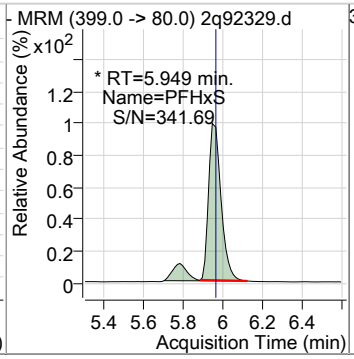


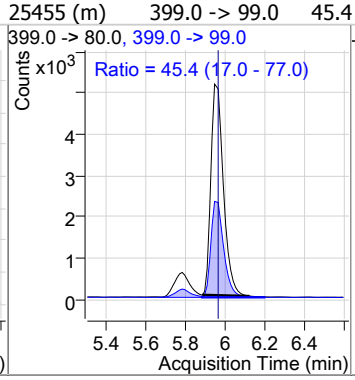


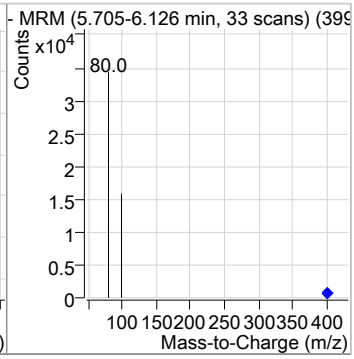


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.93	5.95	-0.02	25455 (m)	399.0 -> 99.0	45.4	17.0	77.0



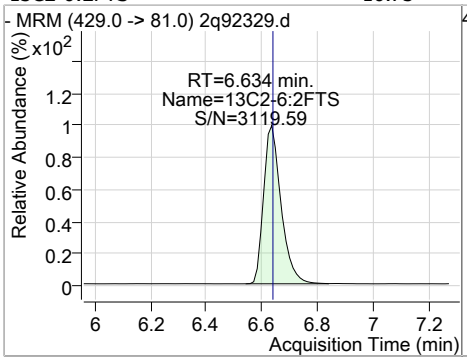


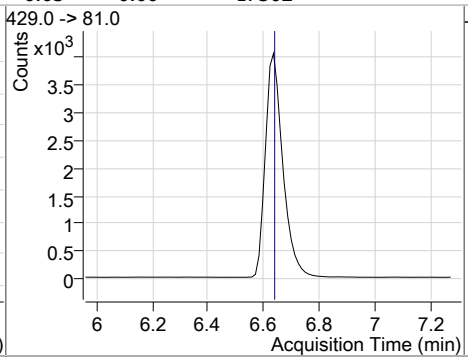


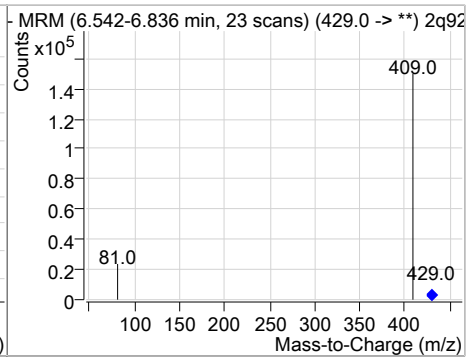


Perfluorinated Compounds by LC/MS/MS

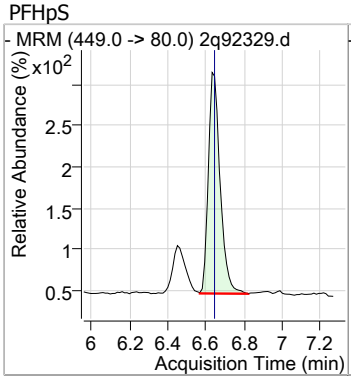
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	16.73	6.63	0.00	17302				

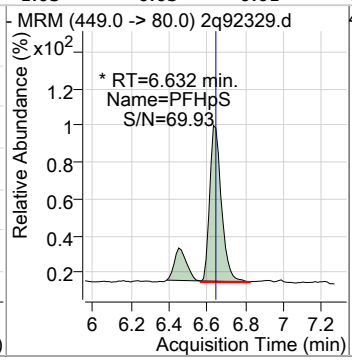


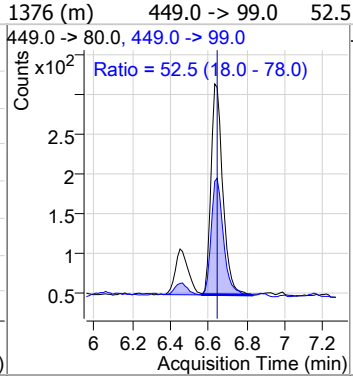


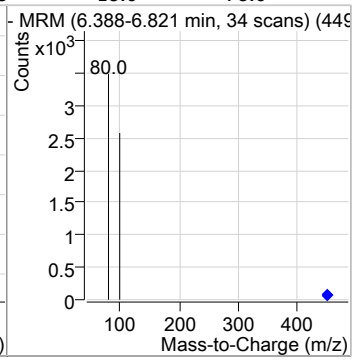


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.03	6.63	-0.01	1376 (m)	449.0 -> 99.0	52.5	18.0	78.0

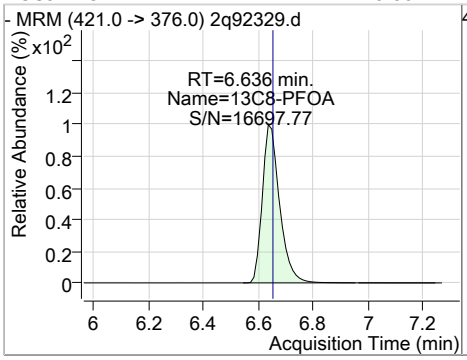


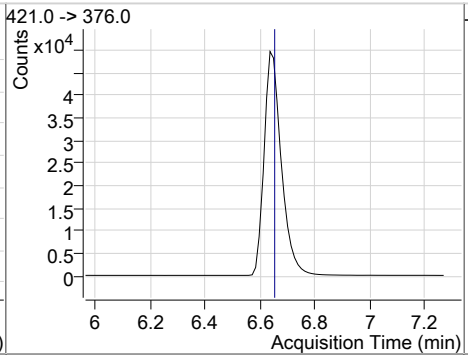


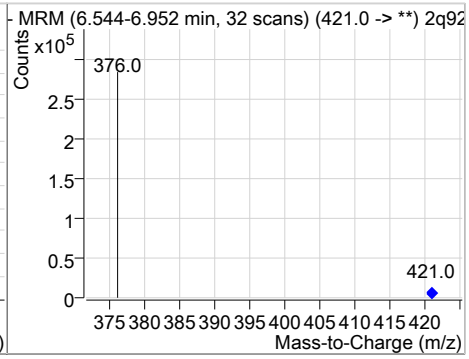




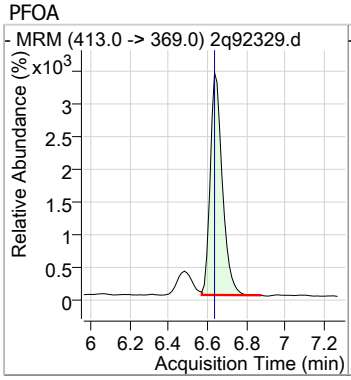
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.80	6.64	-0.01	216317				

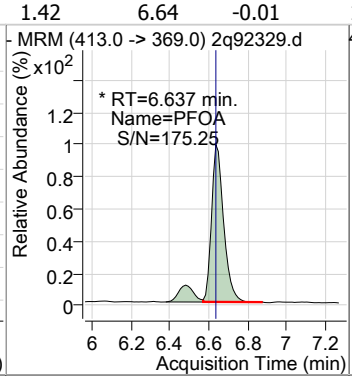


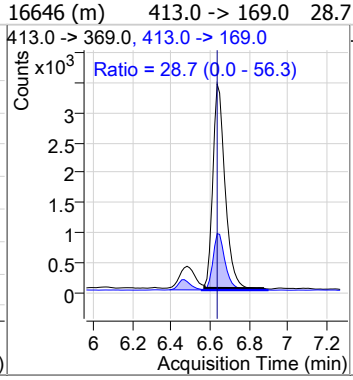


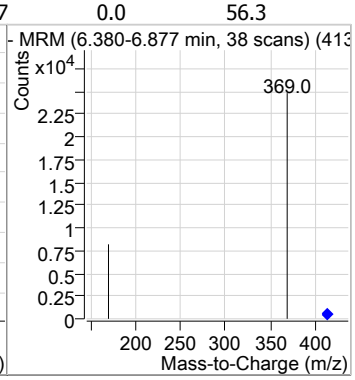


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.42	6.64	-0.01	16646 (m)	413.0 -> 169.0	28.7	0.0	56.3



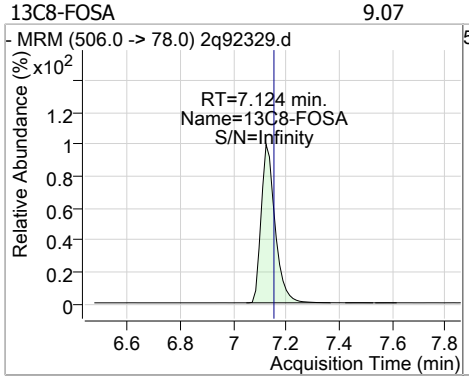


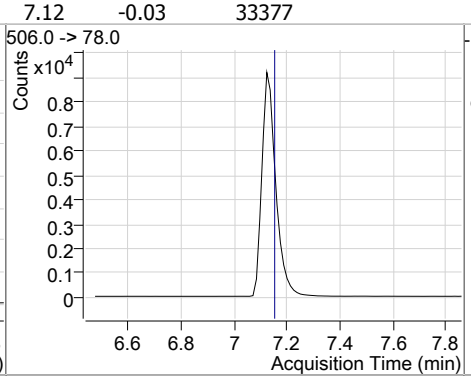


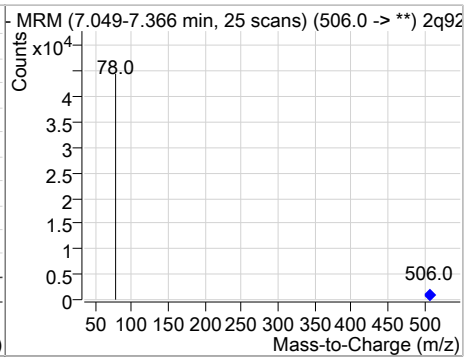


Perfluorinated Compounds by LC/MS/MS

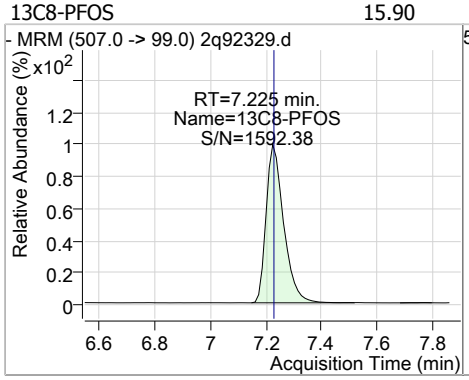
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	9.07	7.12	-0.03	33377				

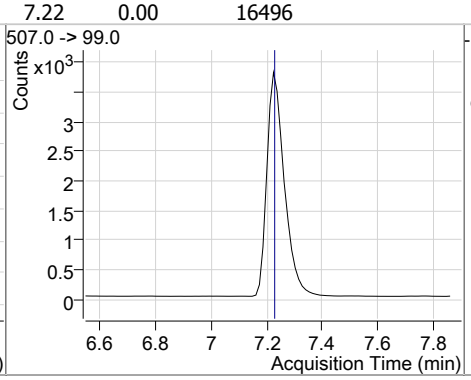


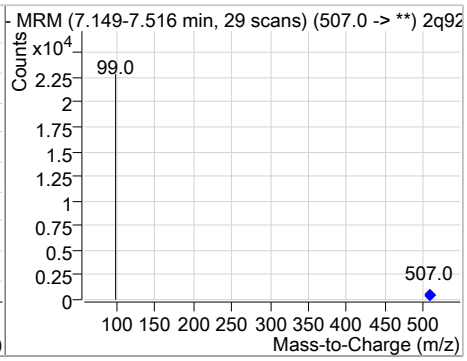




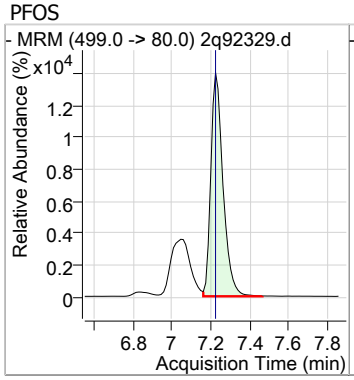
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.90	7.22	0.00	16496				

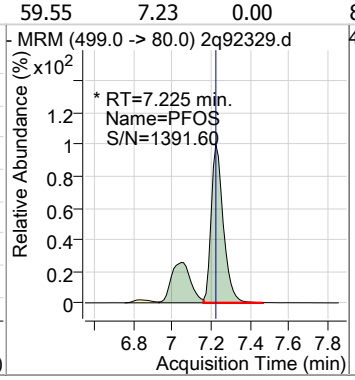


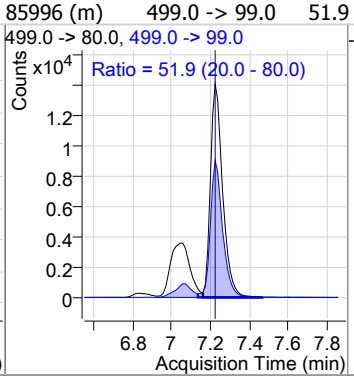


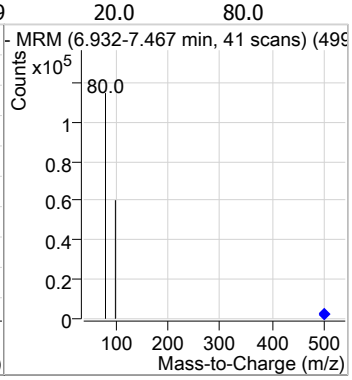


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	59.55	7.23	0.00	85996 (m)	499.0 -> 99.0	51.9	20.0	80.0

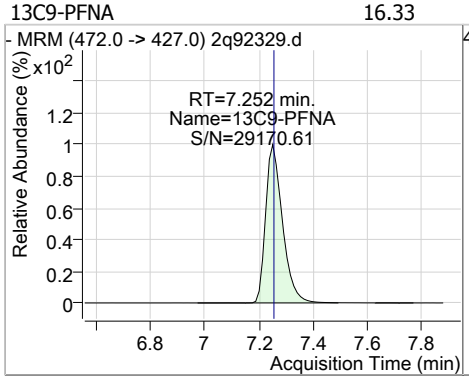


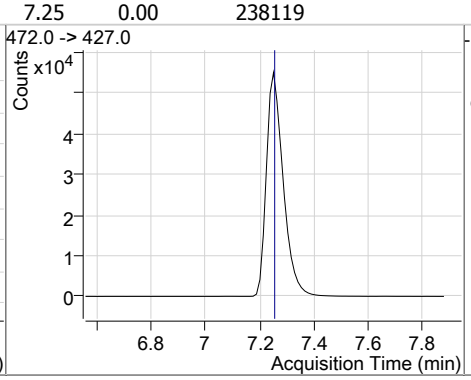


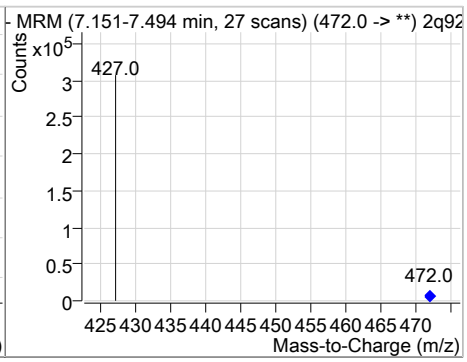




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.33	7.25	0.00	238119				

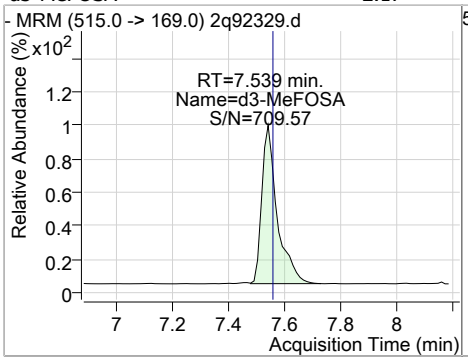


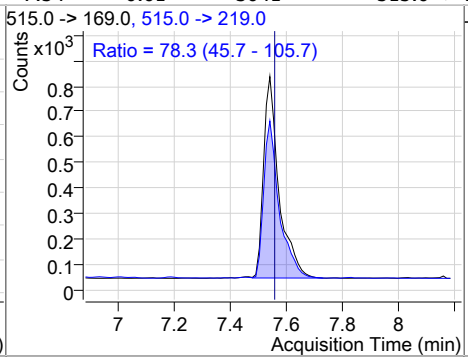


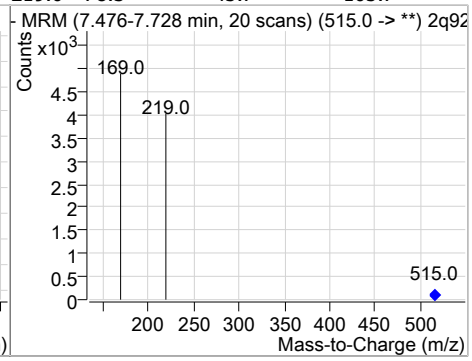


Perfluorinated Compounds by LC/MS/MS

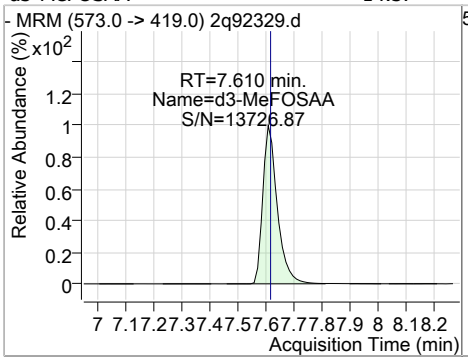
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.17	7.54	-0.01	3041	515.0 -> 219.0	78.3	45.7	105.7

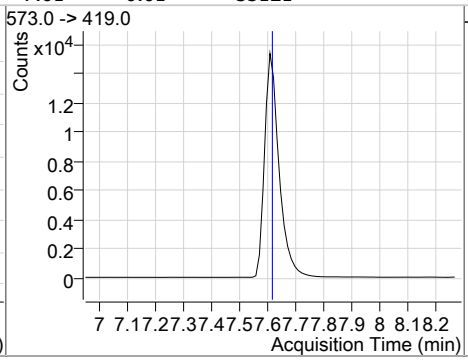


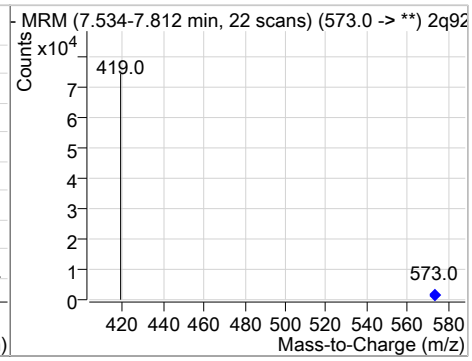




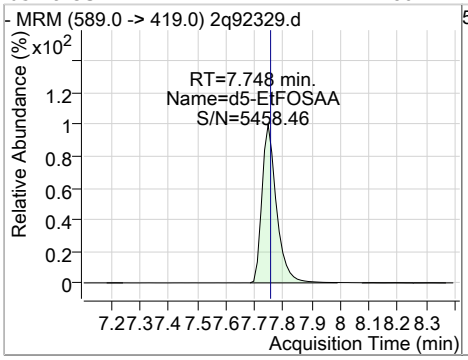
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.37	7.61	-0.01	55121				

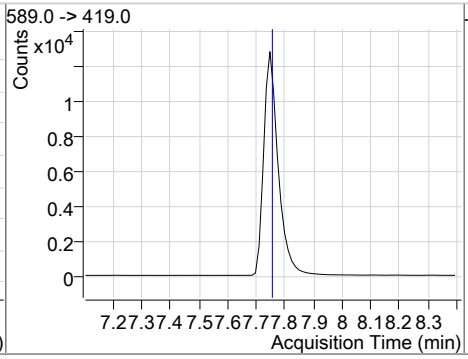


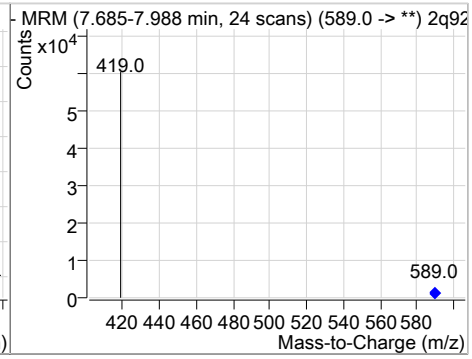




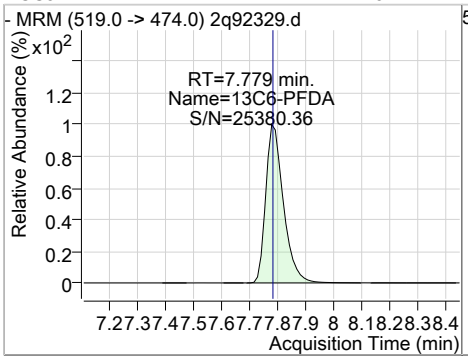
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	14.86	7.75	-0.01	45110				

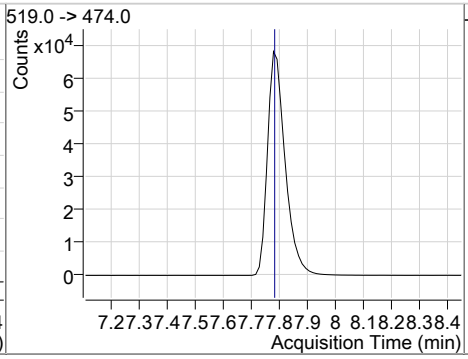


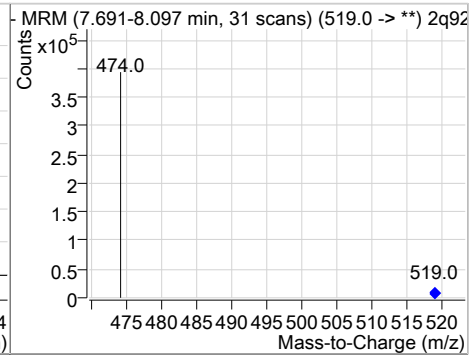




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.42	7.78	0.00	299121				

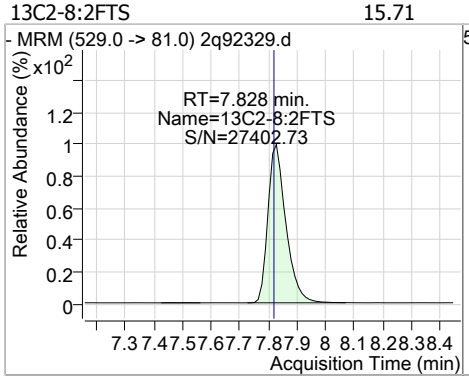


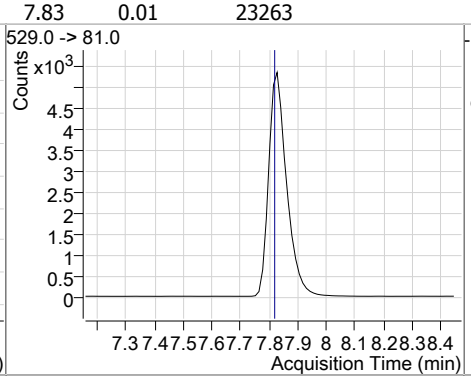


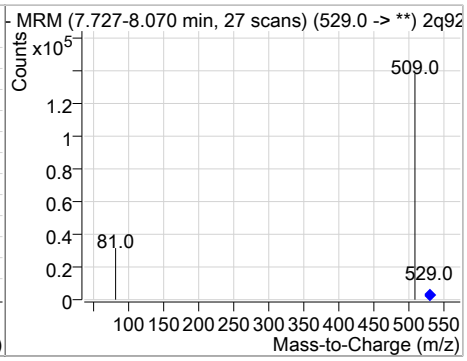


Perfluorinated Compounds by LC/MS/MS

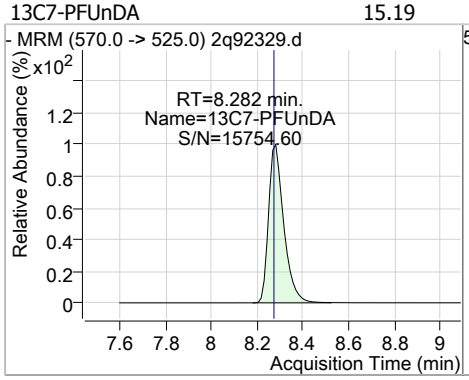
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.71	7.83	0.01	23263				

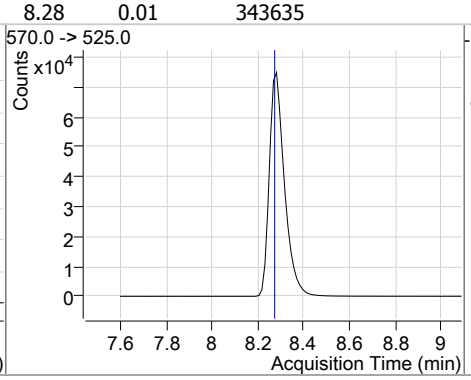


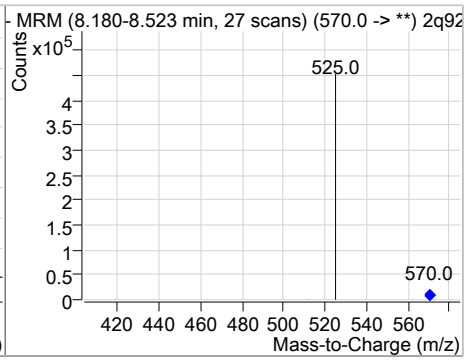




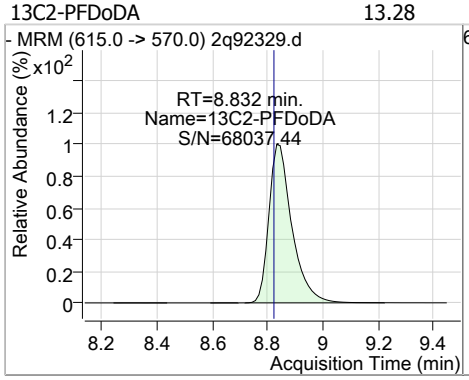
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.19	8.28	0.01	343635				

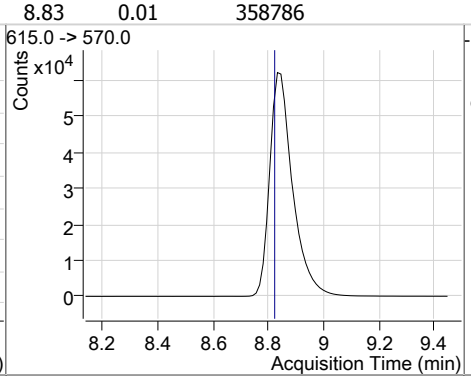


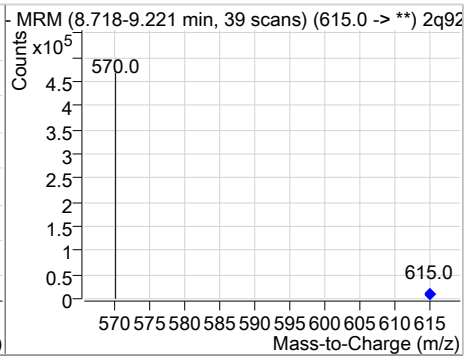




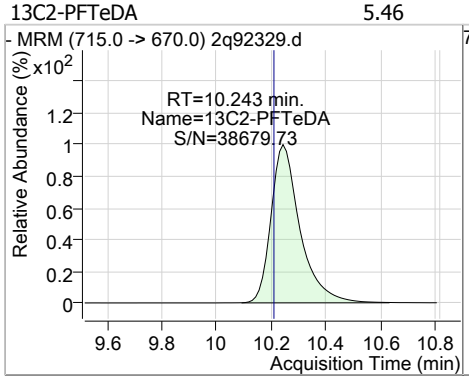
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.28	8.83	0.01	358786				

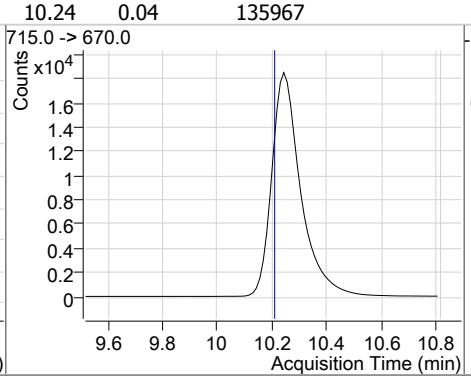


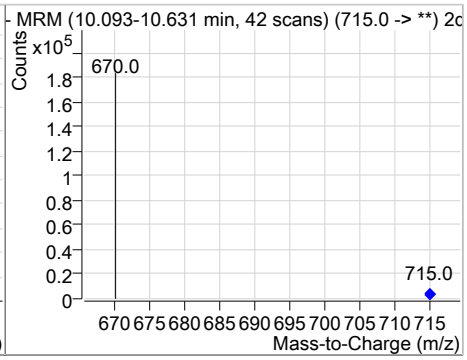




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	5.46	10.24	0.04	135967				







Manual Integration Approval Summary

Sample Number: FA95742-4
Lab FileID: 2Q92329.D
Injection Time: 06/02/22 22:24
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:09 Natasha Gumtie
Supervisor approved: 06/08/22 15:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		5.12	Split peak
Perfluoroheptanoic acid	375-85-9		5.93	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.63	Split peak
Perfluorooctanoic acid	335-67-1		6.64	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92351.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 2:34:30 PM
Sample Name : FA95742-4
Vial : P1-C9
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91428,S2Q1294,125,,,1.0,5,water

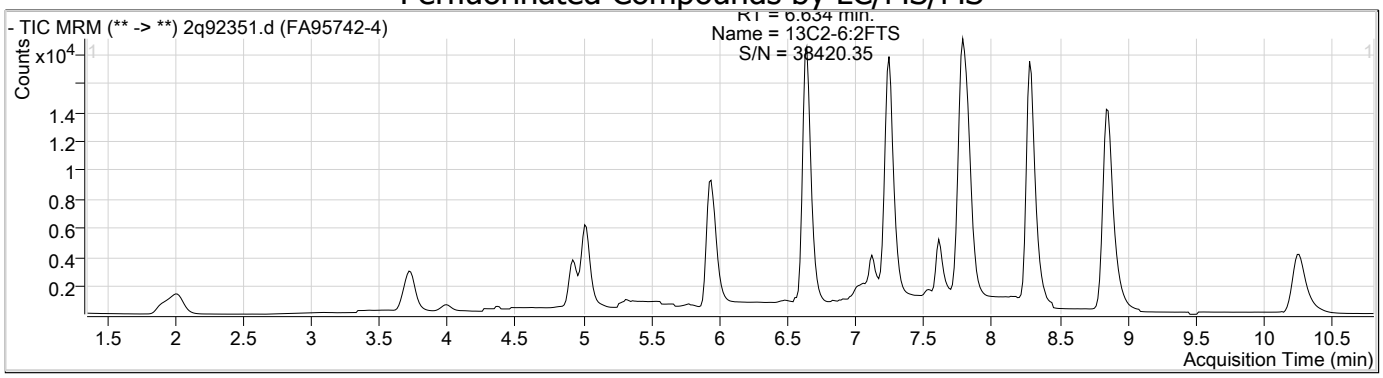
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	10239	20.00	µg/L	-0.013
M4-PFBA	2.002	217.0 -> 172.0	13349	20.00	µg/L	-0.013
M5-PFPeA	3.724	268.0 -> 223.0	14956	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	22130	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	32575	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	45457	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	49809	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	64574	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	75614	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	78752	20.00	µg/L	0.027
M2-PFTeDA	10.255	715.0 -> 670.0	30682	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	8204	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	1810	20.00	µg/L	-0.013
M3-PFHxS	5.967	402.0 -> 99.0	2518	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	3806	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	1727	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	3732	20.00	µg/L	0.000
M2-8:2FTS	7.829	529.0 -> 81.0	5211	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	12718	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	926	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	849	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	1727	3.71	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.6%		
13C2-6:2FTS	6.634	429.0 -> 81.0	3732	3.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.0%		
13C2-8:2FTS	7.829	529.0 -> 81.0	5211	3.52	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.6%		
13C2-PFDoDA	8.845	615.0 -> 570.0	78752	2.92	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 14.6%		
13C2-PFTeDA	10.255	715.0 -> 670.0	30682	1.23	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 6.2%		
13C3-PFBS	3.992	302.0 -> 99.0	1810	3.56	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.8%		
13C3-PFHxS	5.967	402.0 -> 99.0	2518	3.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.7%		
13C4-PFBA	2.002	217.0 -> 172.0	13349	3.46	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.3%		
13C4-PFHpA	5.929	367.0 -> 322.0	32575	3.51	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.5%		
d5-EtFOSAA	7.748	589.0 -> 419.0	10239	3.37	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.9%		
13C5-PFHxA	5.014	318.0 -> 273.0	22130	3.28	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.4%		
13C5-PFPeA	3.724	268.0 -> 223.0	14956	3.28	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

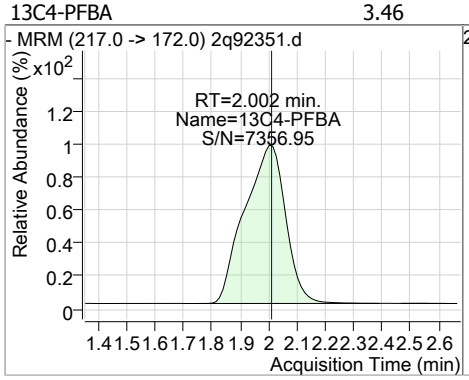
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.4%		
13C6-PFDA	7.792	519.0 -> 474.0	64574	3.55 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.7%		
13C7-PFUnDA	8.282	570.0 -> 525.0	75614	3.34 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.7%		
13C8-FOSA	7.124	506.0 -> 78.0	8204	2.23 µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 11.1%		
13C8-PFOA	6.649	421.0 -> 376.0	45457	3.53 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.7%		
13C8-PFOS	7.225	507.0 -> 99.0	3806	3.67 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.3%		
13C9-PFNA	7.252	472.0 -> 427.0	49809	3.42 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.1%		
d3-MeFOSAA	7.610	573.0 -> 419.0	12718	3.32 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.6%		
13C3-HFPO-DA	5.319	287.0 -> 169.0	926	3.56 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.8%		
d3-MeFOSA	7.539	515.0 -> 169.0	849	0.61 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 3.0%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	1.996	213.0 -> 169.0	786	0.46 µg/L		100
PFBS	3.994	299.0 -> 80.0	371	0.25 µg/L		93
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	5.015	313.0 -> 269.0	2829	0.69 µg/L		98
PFHxS	5.967	399.0 -> 80.0	6046	3.83 µg/L	m	95
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.649	413.0 -> 369.0	3688	0.30 µg/L	m	98
PFOS	7.238	499.0 -> 80.0	18523	11.12 µg/L	m	98
PFPeA	3.726	263.0 -> 219.0	1261	0.22 µg/L		100
PFPeS	5.132	349.0 -> 80.0	305	0.30 µg/L		93
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		
MeFOSA	-	512.0 -> 219.0	-	N.D.		

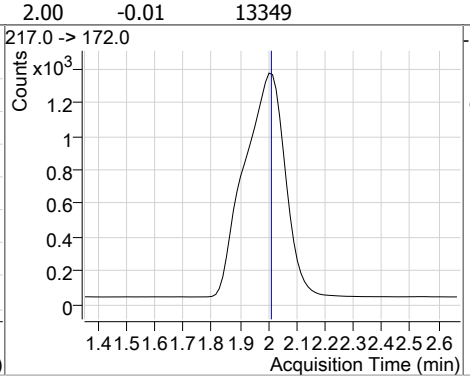
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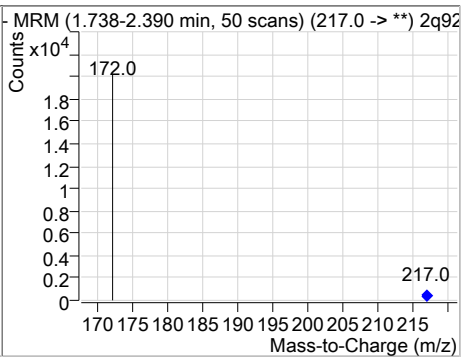
Perfluorinated Compounds by LC/MS/MS



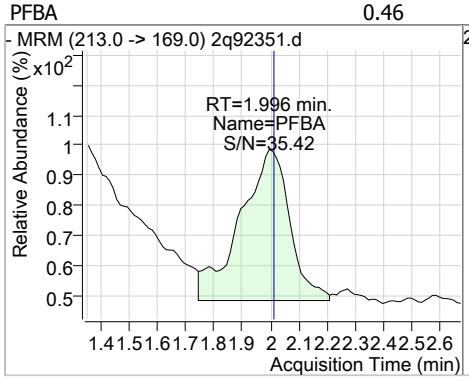
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	3.46	2.00	-0.01	13349				

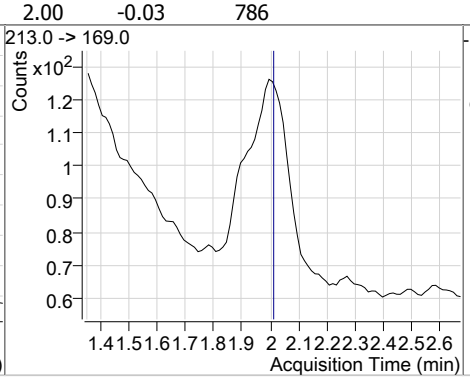


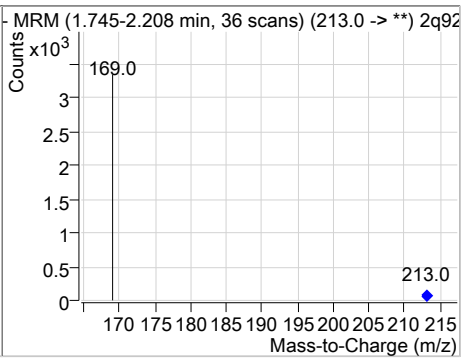




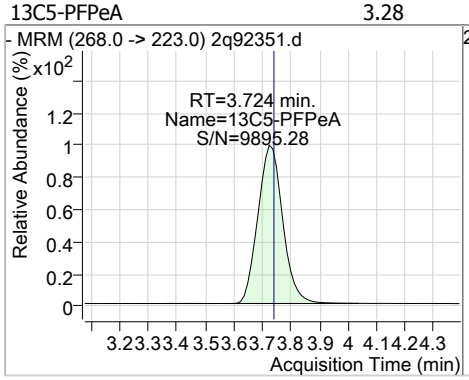
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.46	2.00	-0.03	786				

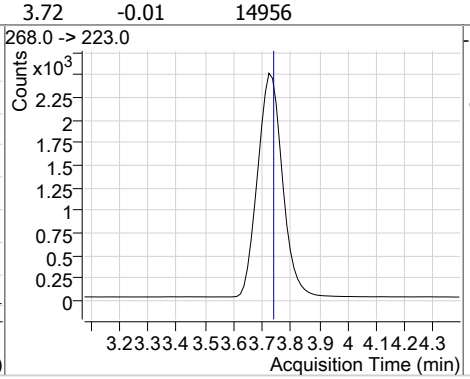


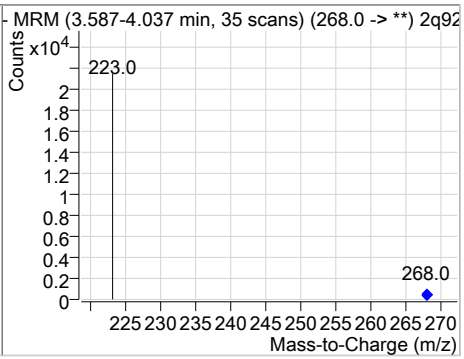




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	3.28	3.72	-0.01	14956				

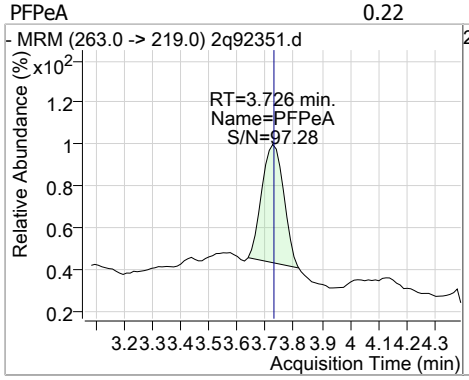


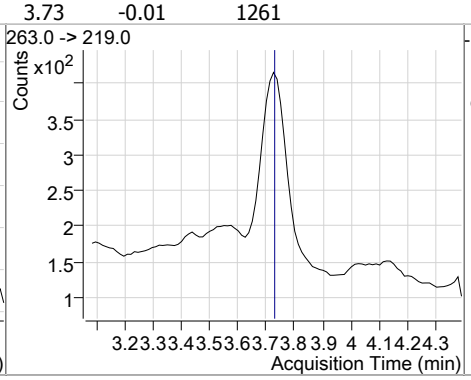


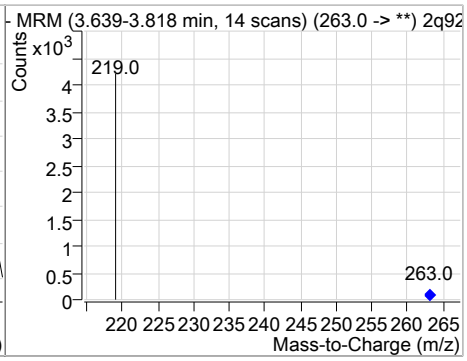


Perfluorinated Compounds by LC/MS/MS

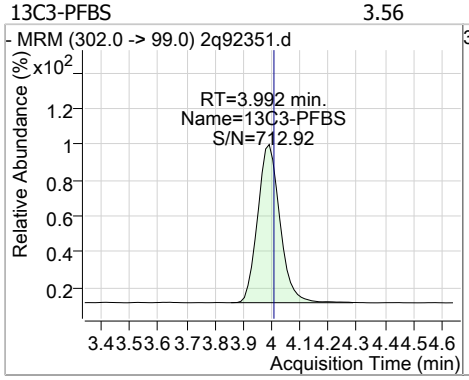
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.22	3.73	-0.01	1261				

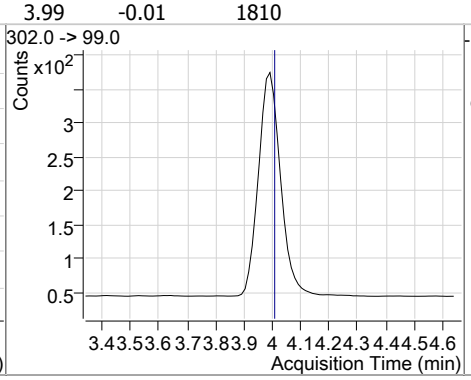


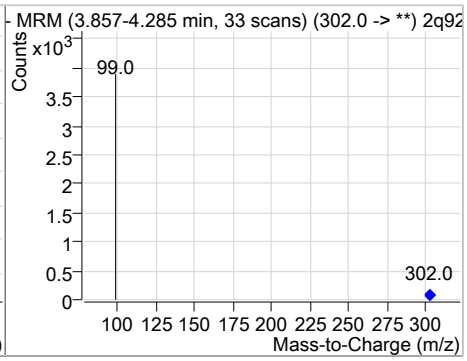




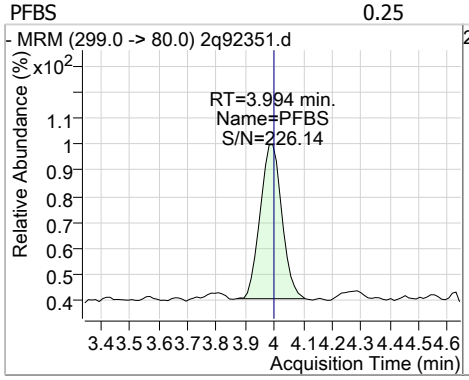
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	3.56	3.99	-0.01	1810				

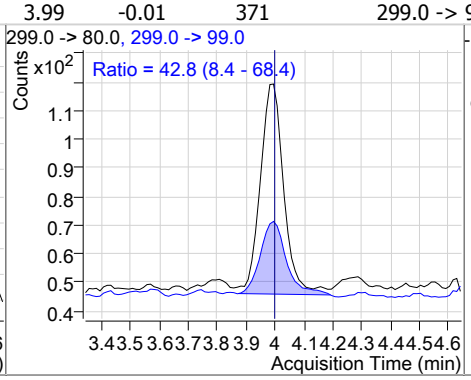


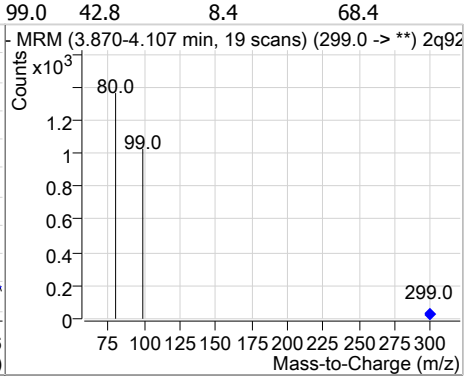




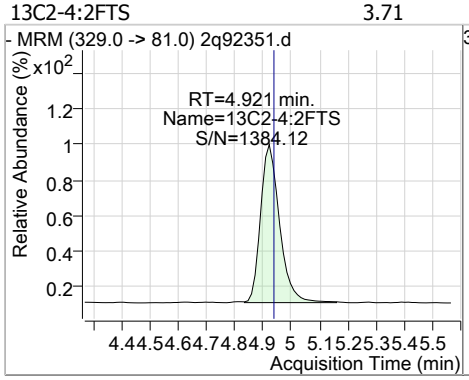
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.25	3.99	-0.01	371	299.0 -> 99.0	42.8	8.4	68.4

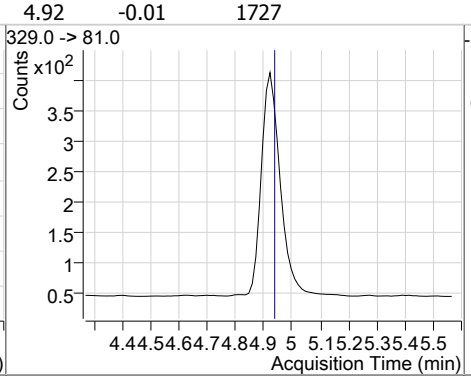


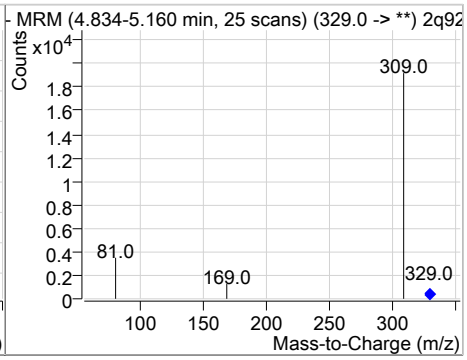




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	3.71	4.92	-0.01	1727				

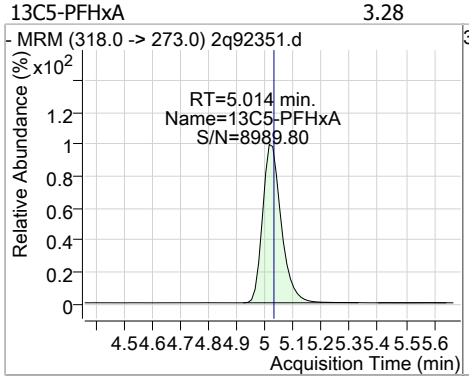


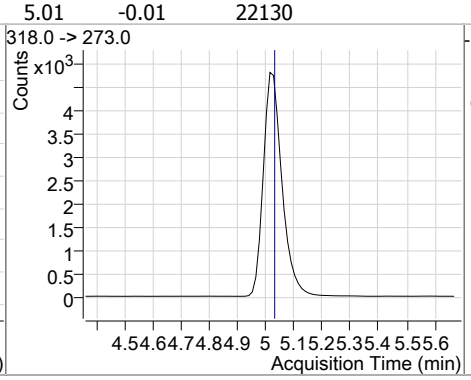


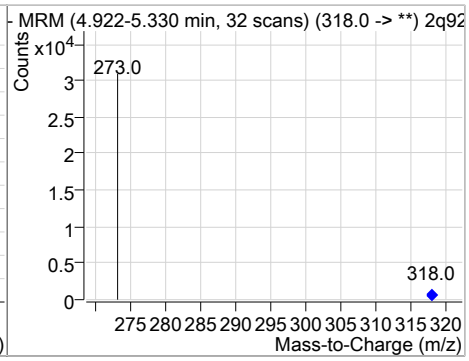


Perfluorinated Compounds by LC/MS/MS

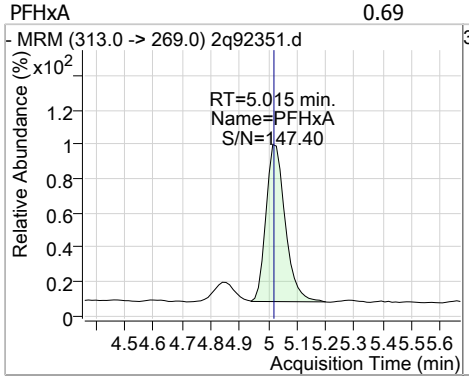
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	3.28	5.01	-0.01	22130				

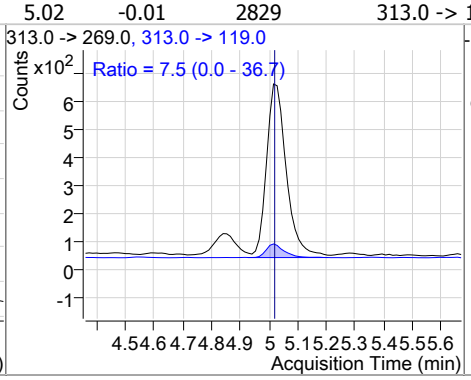


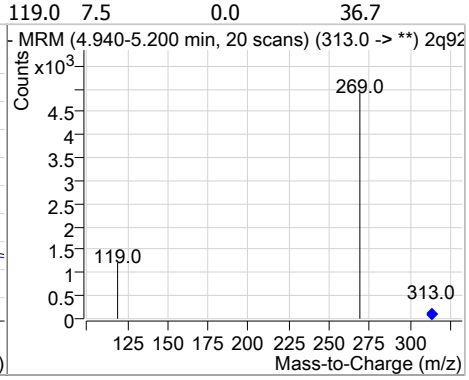




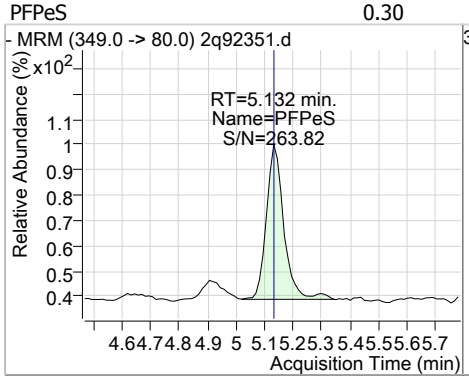
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.69	5.02	-0.01	2829	313.0 -> 119.0	7.5	0.0	36.7

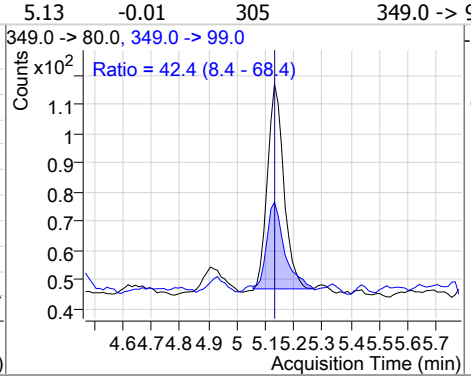


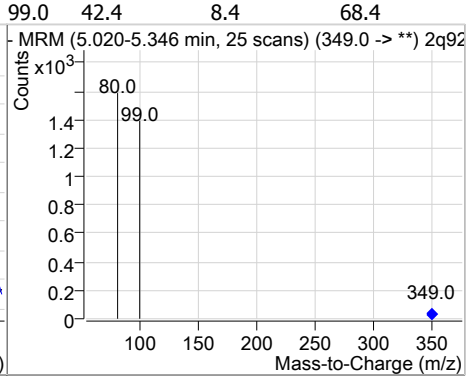




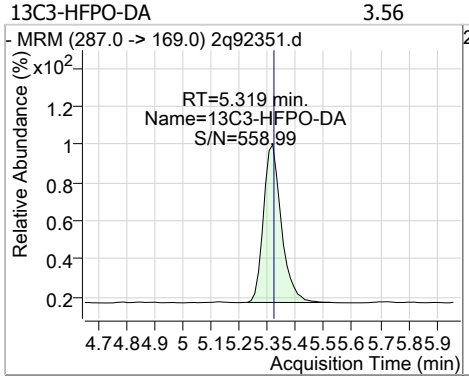
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.30	5.13	-0.01	305	349.0 -> 99.0	42.4	8.4	68.4

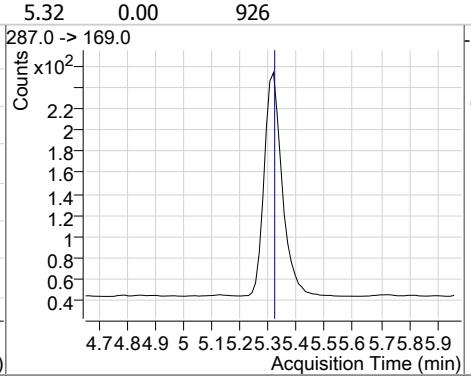


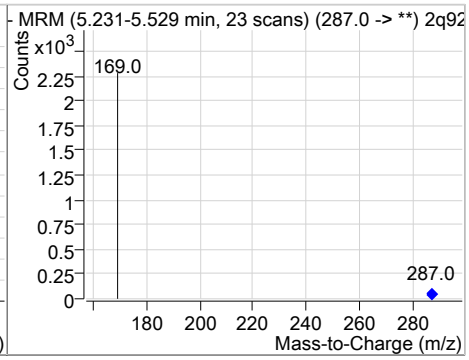




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	3.56	5.32	0.00	926				

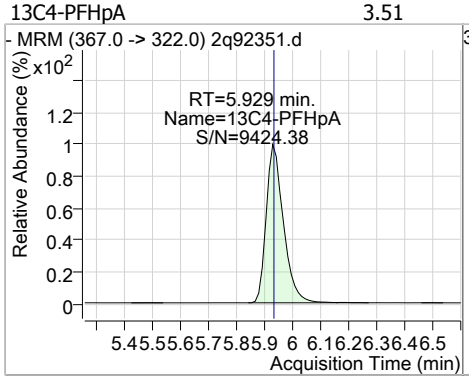


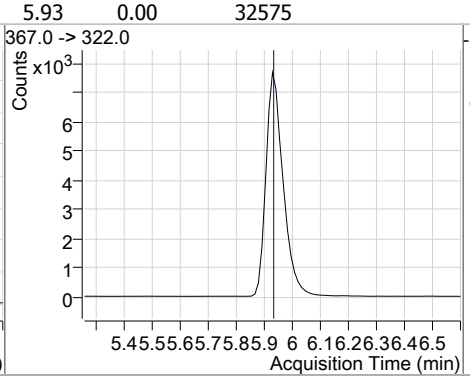


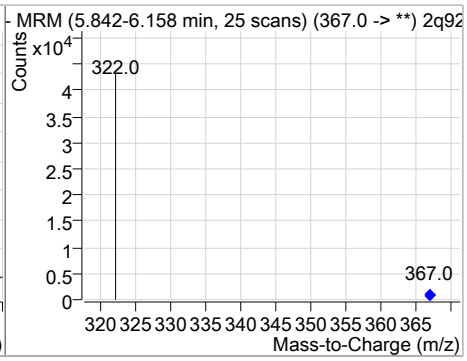


Perfluorinated Compounds by LC/MS/MS

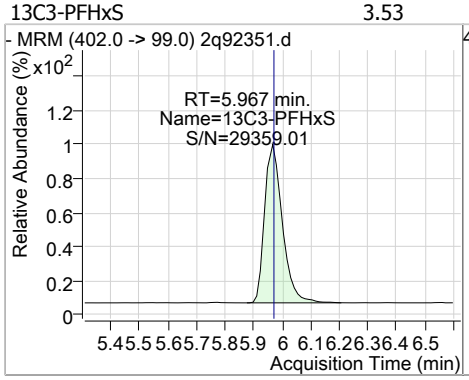
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	3.51	5.93	0.00	32575				

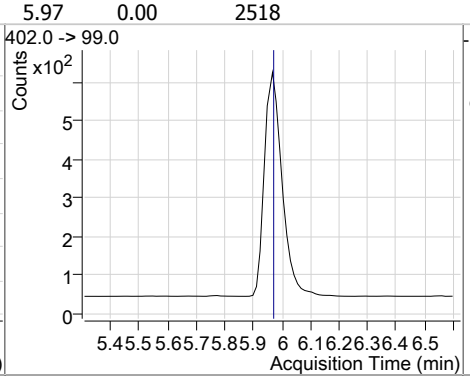


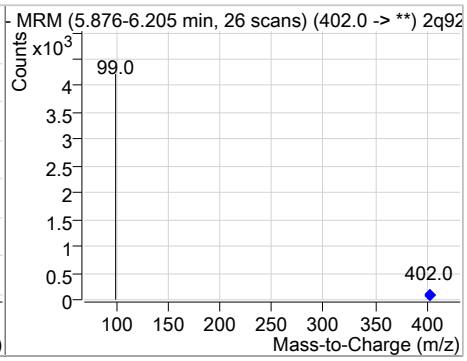




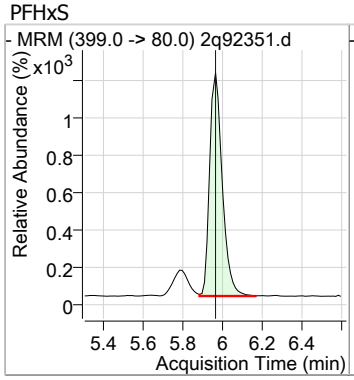
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	3.53	5.97	0.00	2518				

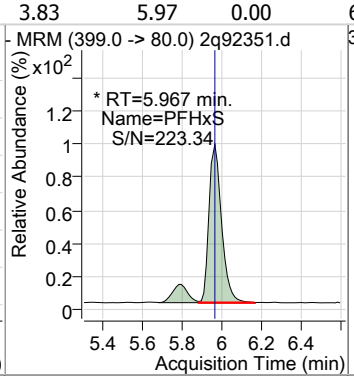


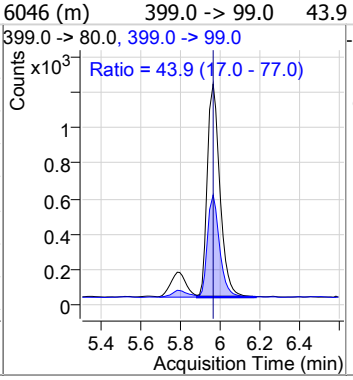


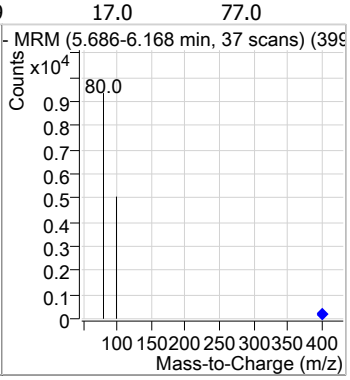


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	3.83	5.97	0.00	6046 (m)	399.0 -> 99.0	43.9	17.0	77.0

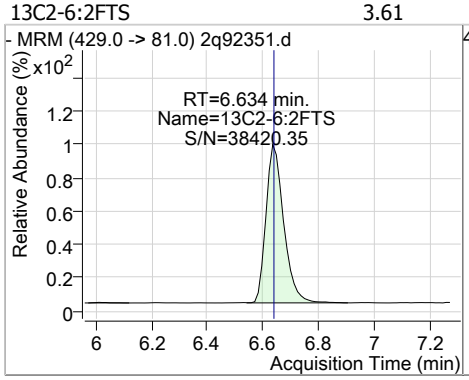


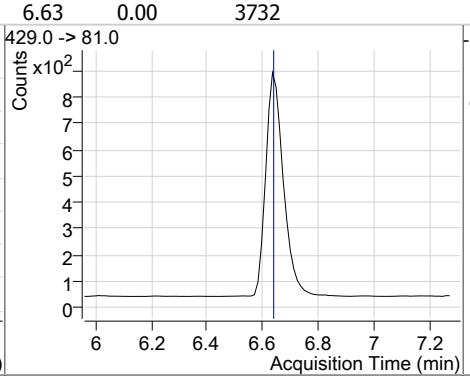


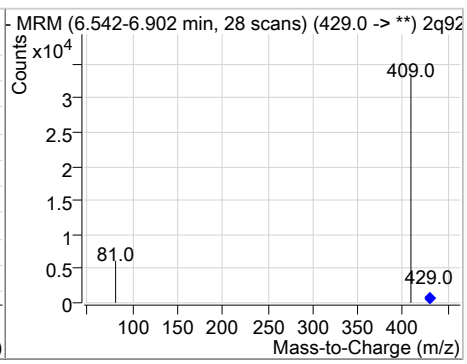




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	3.61	6.63	0.00	3732				

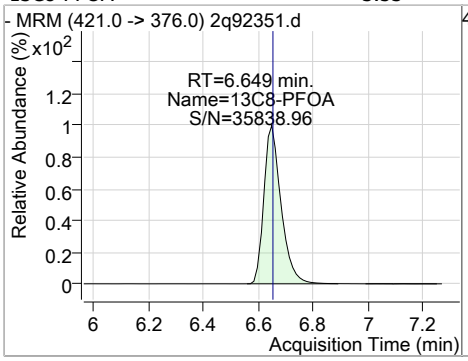


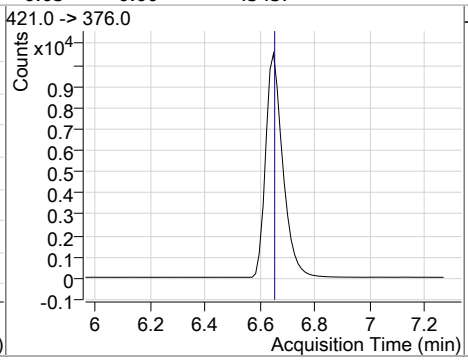


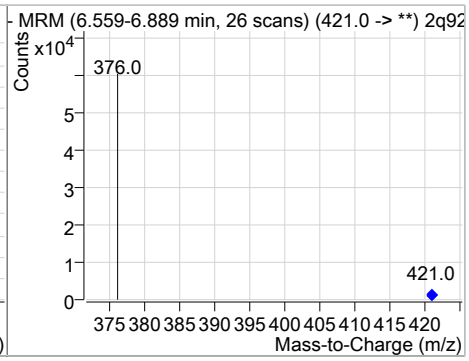


Perfluorinated Compounds by LC/MS/MS

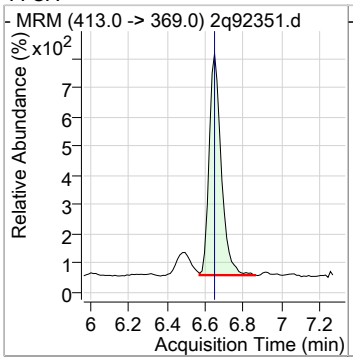
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	3.53	6.65	0.00	45457				

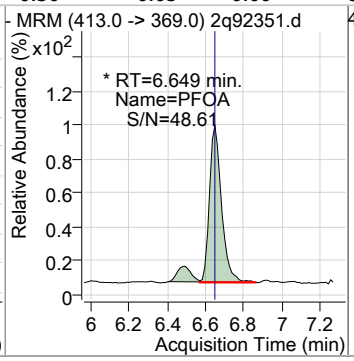


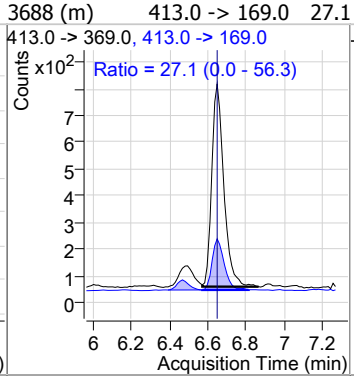


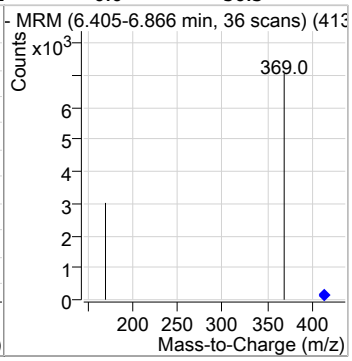


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.30	6.65	0.00	3688 (m)	413.0 -> 169.0	27.1	0.0	56.3

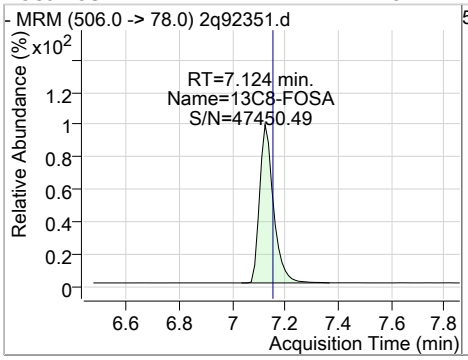


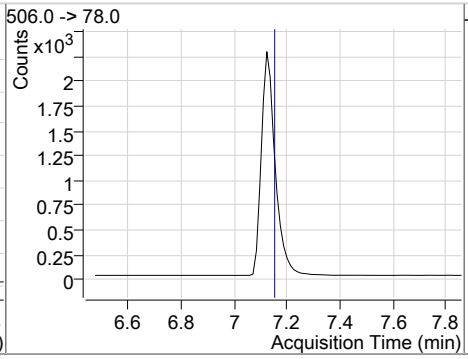


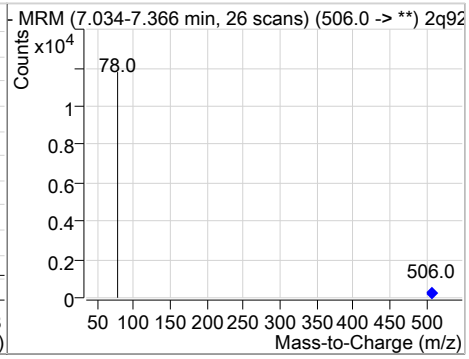




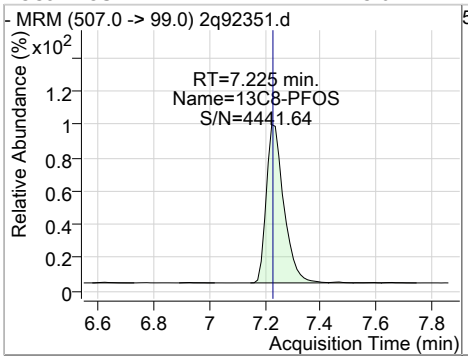
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.23	7.12	-0.03	8204				

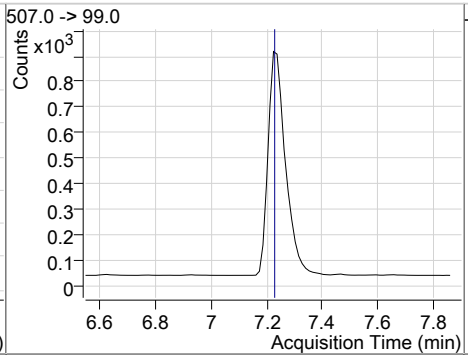


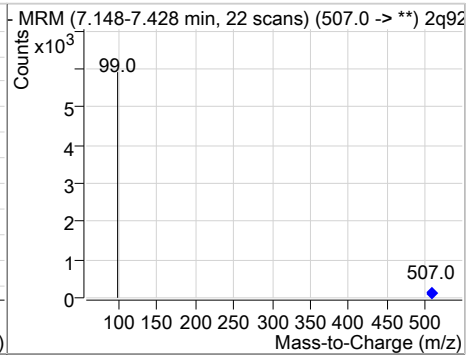




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	3.67	7.22	0.00	3806				

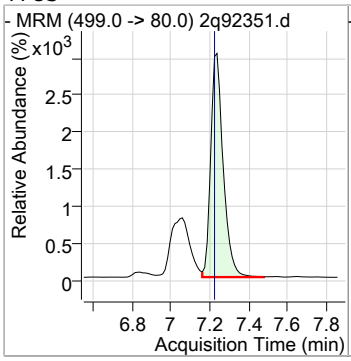


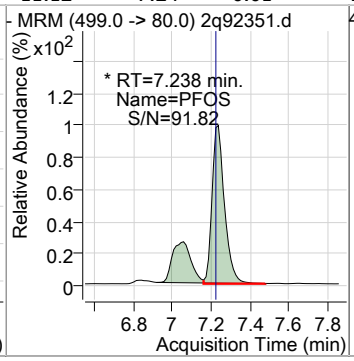


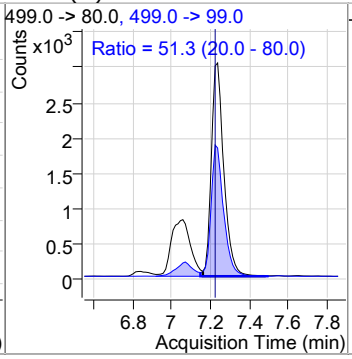


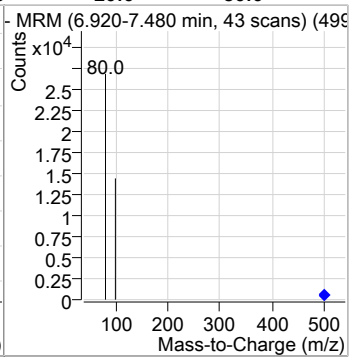
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	11.12	7.24	0.01	18523 (m)	499.0 -> 99.0	51.3	20.0	80.0

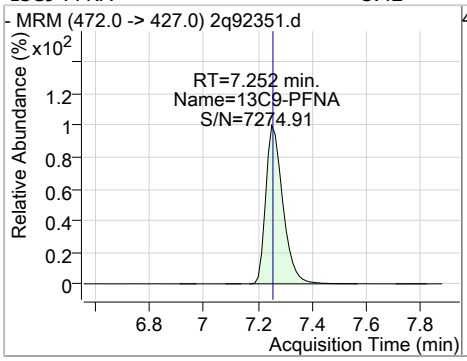


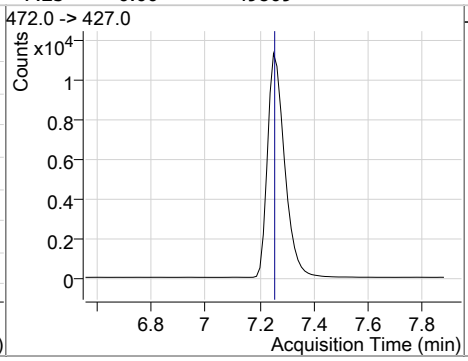


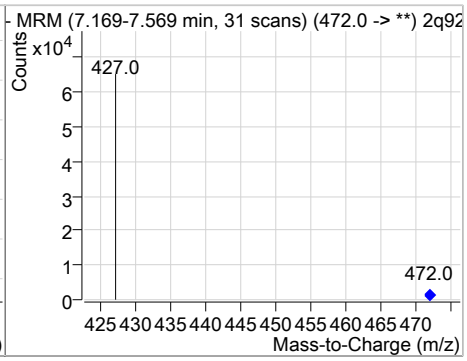




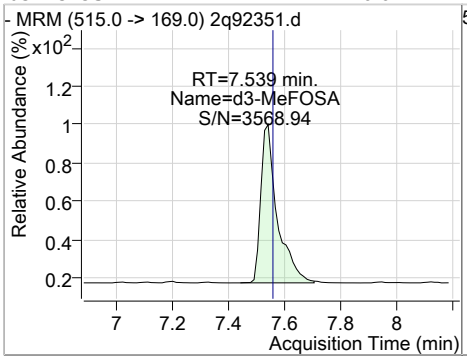
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	3.42	7.25	0.00	49809				

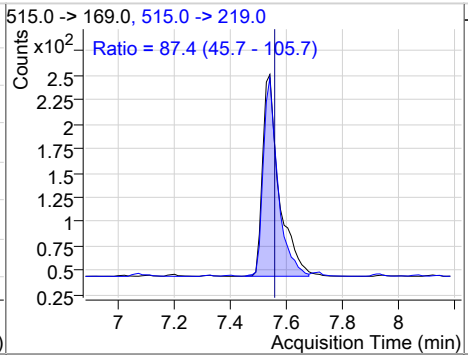


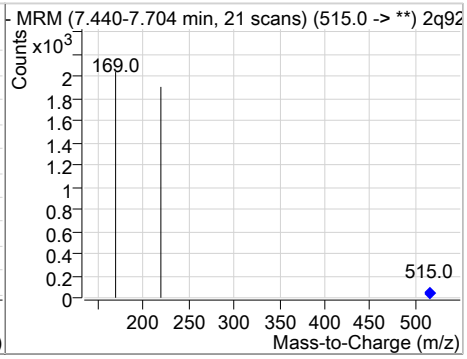




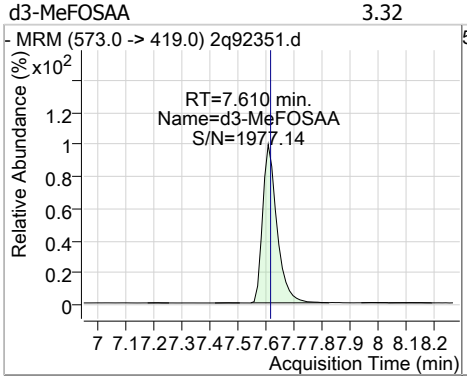
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	0.61	7.54	-0.01	849	515.0 -> 219.0	87.4	45.7	105.7

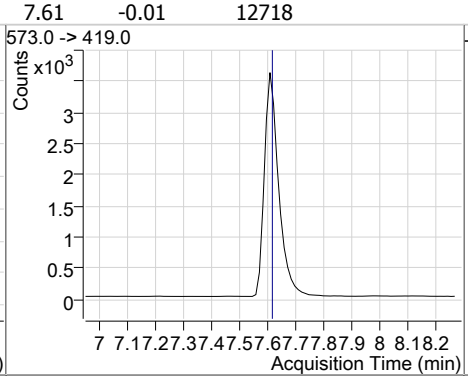


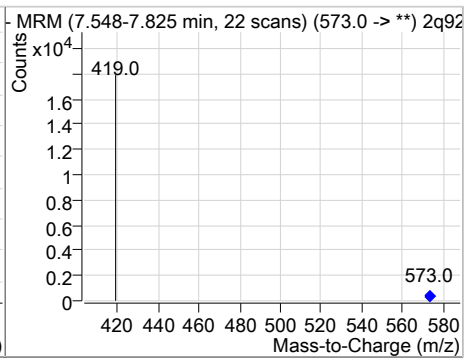




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.32	7.61	-0.01	12718				

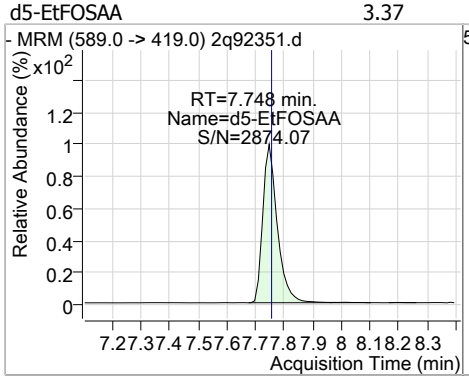


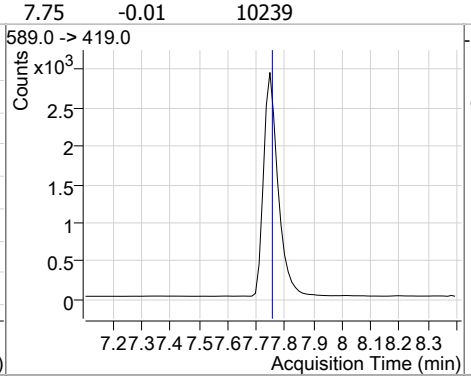


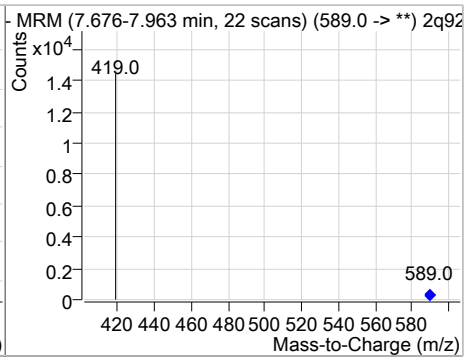


Perfluorinated Compounds by LC/MS/MS

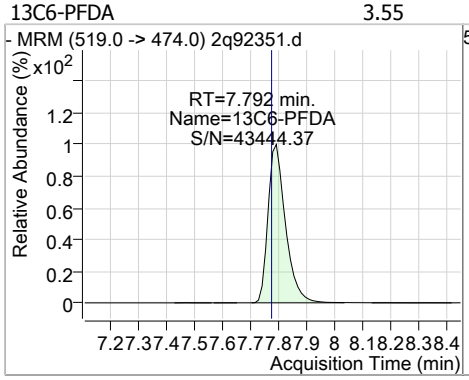
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.37	7.75	-0.01	10239				

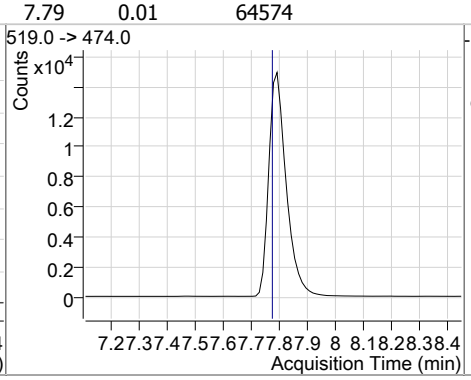


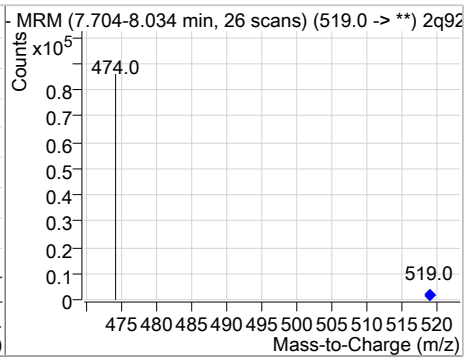




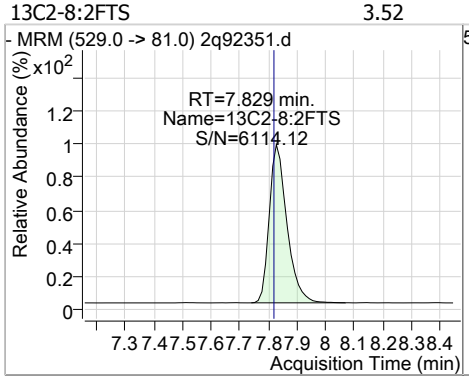
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	3.55	7.79	0.01	64574				

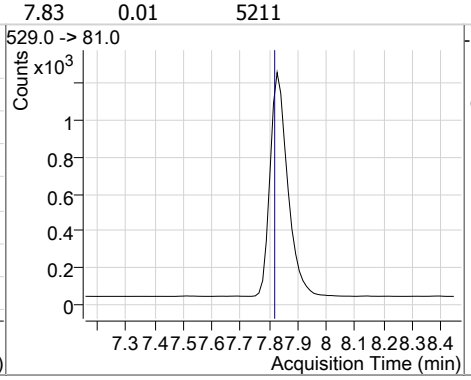


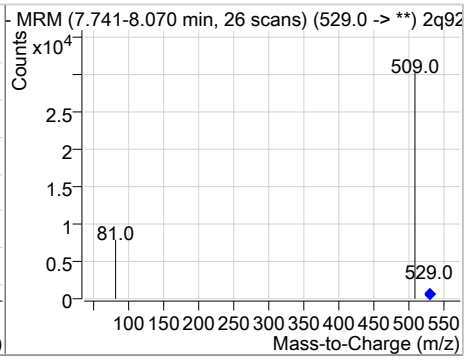




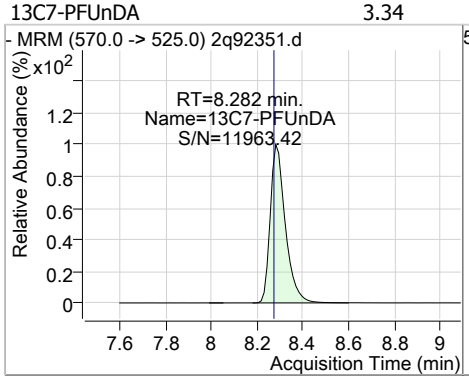
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	3.52	7.83	0.01	5211				

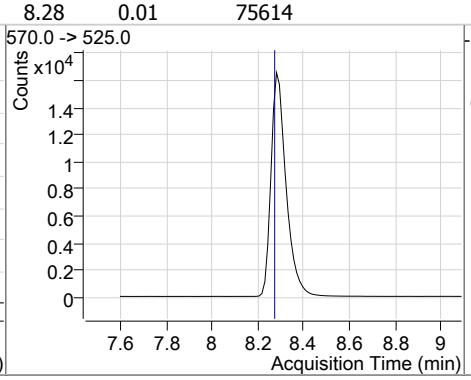


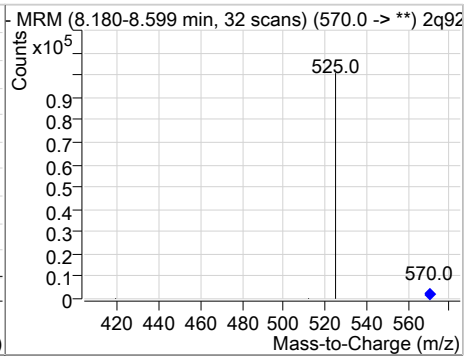




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	3.34	8.28	0.01	75614				

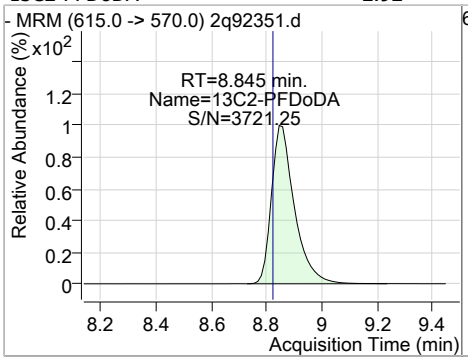


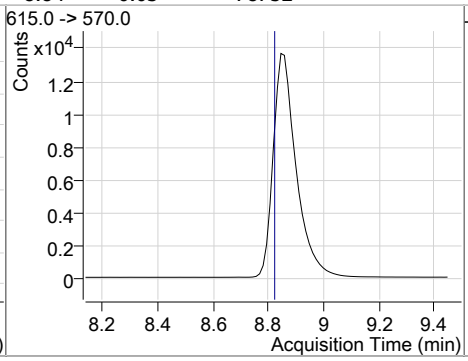


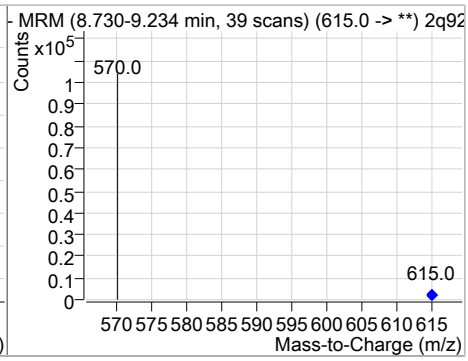


Perfluorinated Compounds by LC/MS/MS

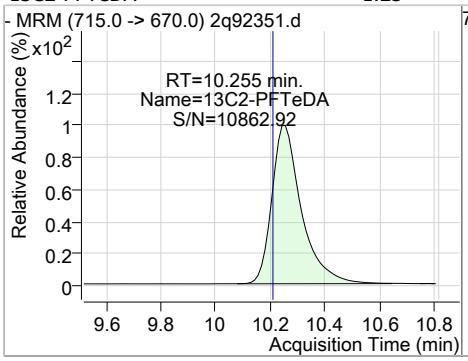
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	2.92	8.84	0.03	78752				

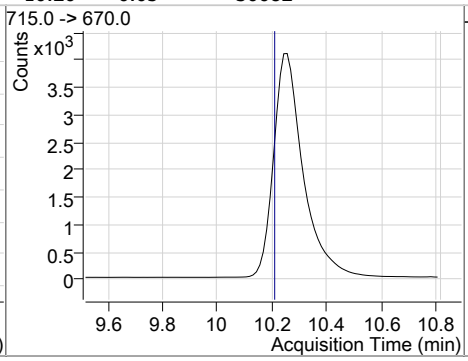


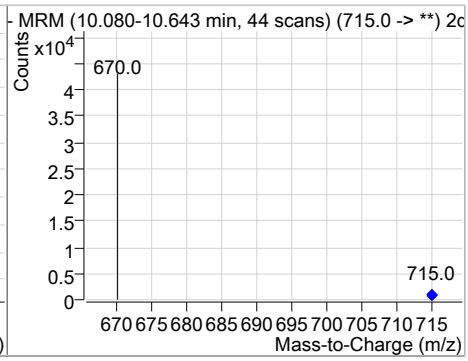




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	10.26	0.05	30682				







Manual Integration Approval Summary

Sample Number: FA95742-4
Lab FileID: 2Q92351.D
Injection Time: 06/03/22 14:34
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:09 Natasha Gumtie
Supervisor approved: 06/08/22 15:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanoic acid	335-67-1		6.65	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92726.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/8/2022 1:07:24 PM
Sample Name : fa95742-4
Vial : P2-A1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91510,S2Q1298,125,,,1.0,1,water

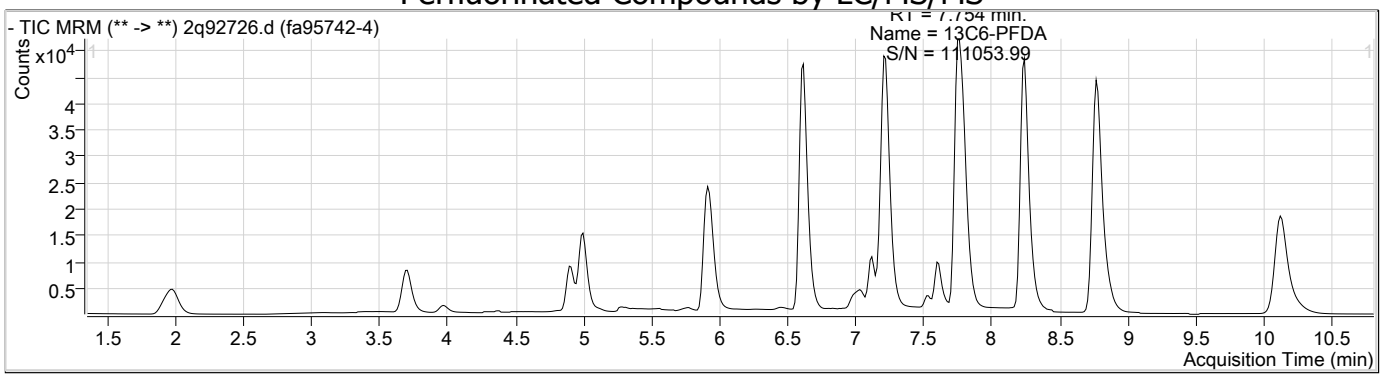
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	27077	20.00	µg/L	-0.025
M4-PFBA	1.977	217.0 -> 172.0	34398	20.00	µg/L	-0.038
M5-PFPeA	3.711	268.0 -> 223.0	36592	20.00	µg/L	-0.025
M5-PFHxA	5.002	318.0 -> 273.0	54515	20.00	µg/L	-0.025
M4-PFHpA	5.904	367.0 -> 322.0	83630	20.00	µg/L	-0.025
M8-PFOA	6.623	421.0 -> 376.0	118859	20.00	µg/L	-0.025
M9-PFNA	7.227	472.0 -> 427.0	136595	20.00	µg/L	-0.025
M6-PFDA	7.754	519.0 -> 474.0	177137	20.00	µg/L	-0.026
M7-PFUnDA	8.243	570.0 -> 525.0	214621	20.00	µg/L	-0.025
M2-PFDoDA	8.768	615.0 -> 570.0	237919	20.00	µg/L	-0.050
M2-PFTeDA	10.118	715.0 -> 670.0	135344	20.00	µg/L	-0.088
M8-FOSA	7.123	506.0 -> 78.0	32677	20.00	µg/L	-0.025
M3-PFBS	3.967	302.0 -> 99.0	4602	20.00	µg/L	-0.038
M3-PFHxS	5.936	402.0 -> 99.0	7156	20.00	µg/L	-0.031
M8-PFOS	7.199	507.0 -> 99.0	10049	20.00	µg/L	-0.025
M2-4:2FTS	4.896	329.0 -> 81.0	4276	20.00	µg/L	-0.038
M2-6:2FTS	6.608	429.0 -> 81.0	9915	20.00	µg/L	-0.025
M2-8:2FTS	7.791	529.0 -> 81.0	14913	20.00	µg/L	-0.025
M3-MeFOSAA	7.598	573.0 -> 419.0	30309	20.00	µg/L	-0.025
M3-HFPO-DA	5.294	287.0 -> 169.0	2310	20.00	µg/L	-0.025
M3-MeFOSA	7.526	515.0 -> 169.0	4736	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.896	329.0 -> 81.0	4276	9.19	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 46.0%		
13C2-6:2FTS	6.608	429.0 -> 81.0	9915	9.59	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 47.9%		
13C2-8:2FTS	7.791	529.0 -> 81.0	14913	10.07	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 50.4%		
13C2-PFDoDA	8.768	615.0 -> 570.0	237919	8.81	µg/L	-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.0%		
13C2-PFTeDA	10.118	715.0 -> 670.0	135344	5.44	µg/L	-0.088
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 27.2%		
13C3-PFBS	3.967	302.0 -> 99.0	4602	9.05	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.2%		
13C3-PFHxS	5.936	402.0 -> 99.0	7156	10.04	µg/L	-0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 50.2%		
13C4-PFBA	1.977	217.0 -> 172.0	34398	8.90	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.5%		
13C4-PFHpA	5.904	367.0 -> 322.0	83630	9.01	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.0%		
d5-EtFOSAA	7.735	589.0 -> 419.0	27077	8.92	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.6%		
13C5-PFHxA	5.002	318.0 -> 273.0	54515	8.07	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 40.4%		
13C5-PFPeA	3.711	268.0 -> 223.0	36592	8.03	µg/L	-0.025

Perfluorinated Compounds by LC/MS/MS

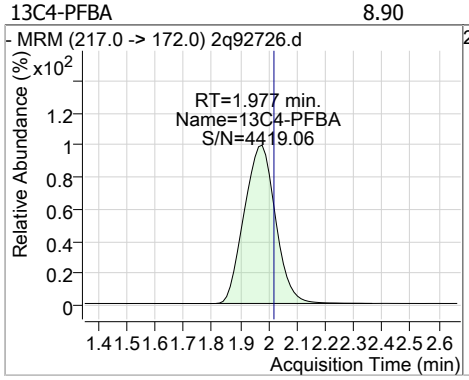
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 40.1%			
13C6-PFDA	7.754	519.0 -> 474.0	177137	9.73	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 48.6%			
13C7-PFUnDA	8.243	570.0 -> 525.0	214621	9.48	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 47.4%			
13C8-FOSA	7.123	506.0 -> 78.0	32677	8.88	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.4%			
13C8-PFOA	6.623	421.0 -> 376.0	118859	9.23	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 46.2%			
13C8-PFOS	7.199	507.0 -> 99.0	10049	9.68	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 48.4%			
13C9-PFNA	7.227	472.0 -> 427.0	136595	9.37	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 46.8%			
d3-MeFOSAA	7.598	573.0 -> 419.0	30309	7.90	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 39.5%			
13C3-HFPO-DA	5.294	287.0 -> 169.0	2310	8.87	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.4%			
d3-MeFOSA	7.526	515.0 -> 169.0	4736	3.38	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.9%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.971	213.0 -> 169.0	1654	1.87	µg/L		100
PFBS	3.969	299.0 -> 80.0	1173	1.53	µg/L		91
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.905	363.0 -> 319.0	6437	0.94	µg/L	m	99
PFHpS	6.620	449.0 -> 80.0	1059	1.26	µg/L	m	99
PFHxA	5.003	313.0 -> 269.0	8746	4.34	µg/L		98
PFHxS	5.937	399.0 -> 80.0	19775	22.02	µg/L	m	97
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.624	413.0 -> 369.0	11107	1.72	µg/L	m	93
PFOS	7.200	499.0 -> 80.0	67300	76.51	µg/L	m	99
PFPeA	3.701	263.0 -> 219.0	4447	1.58	µg/L		100
PFPeS	5.120	349.0 -> 80.0	1137	2.17	µg/L	m	97
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

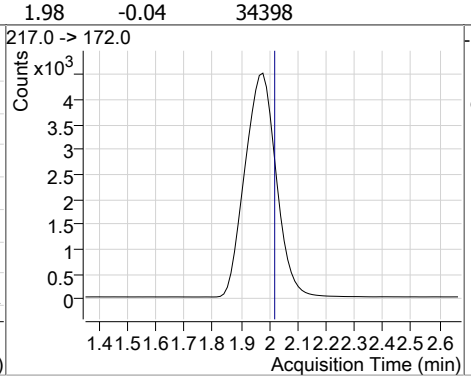
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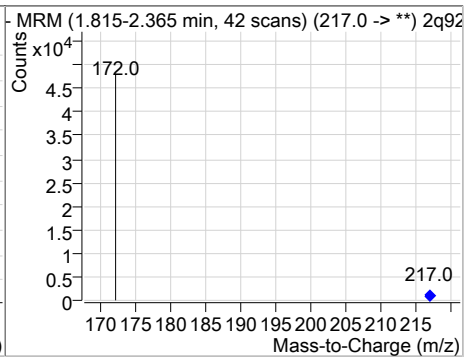
Perfluorinated Compounds by LC/MS/MS



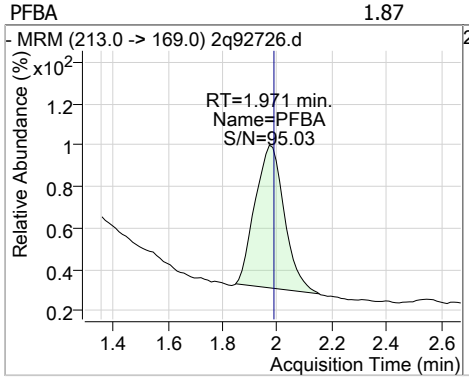
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	8.90	1.98	-0.04	34398				

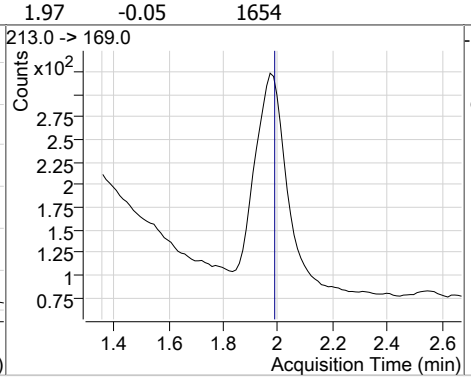


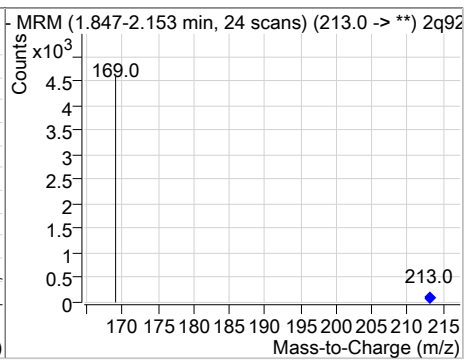




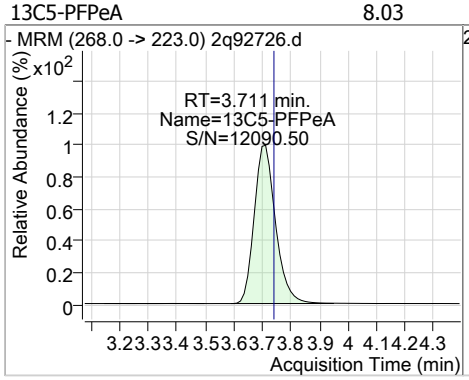
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.87	1.97	-0.05	1654				

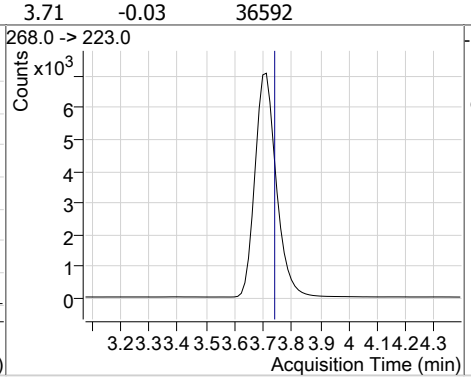


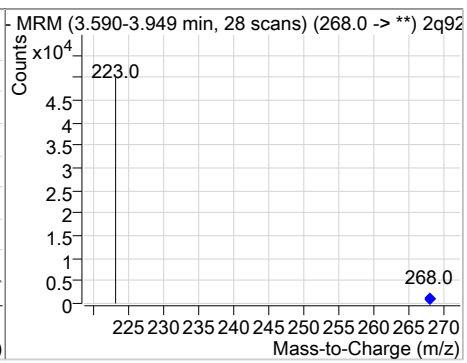




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	8.03	3.71	-0.03	36592				

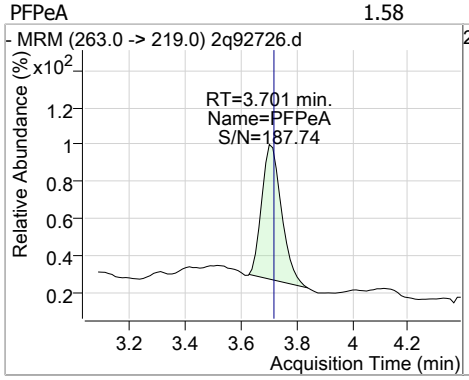


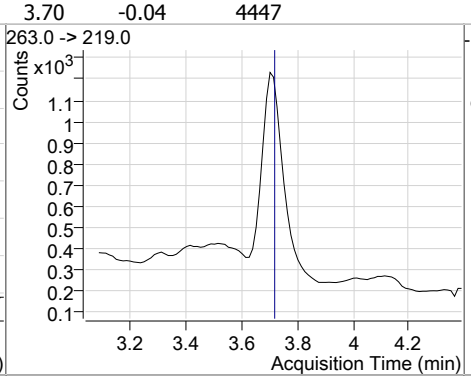


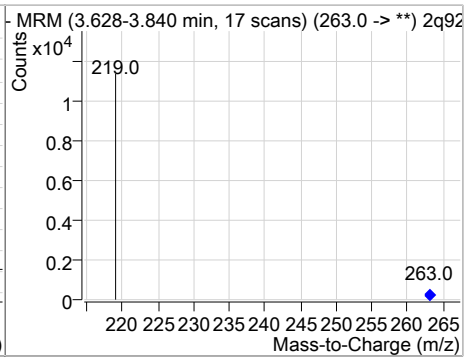


Perfluorinated Compounds by LC/MS/MS

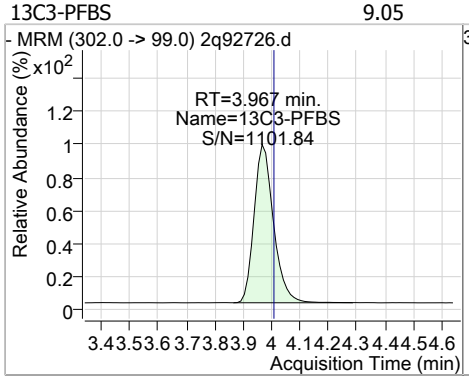
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.58	3.70	-0.04	4447				

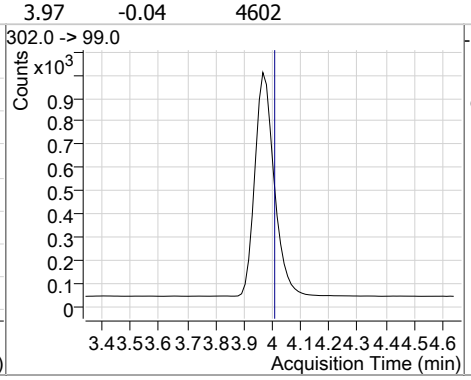


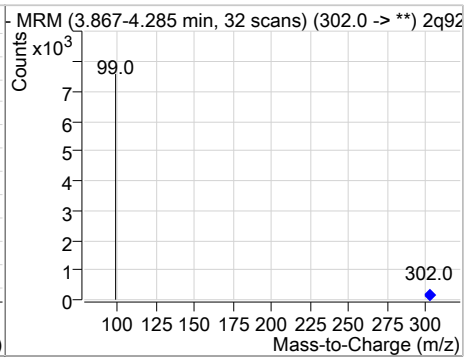




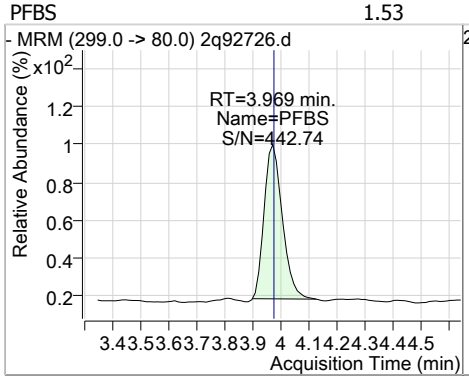
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	9.05	3.97	-0.04	4602				

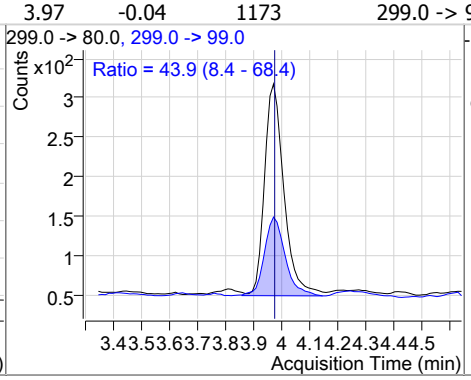


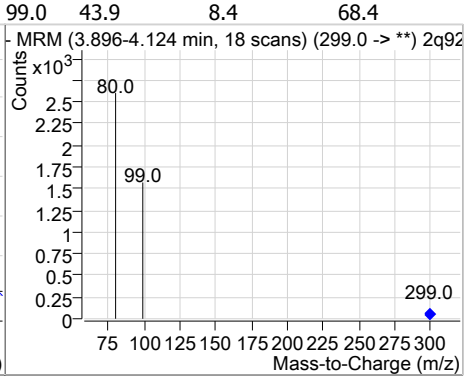




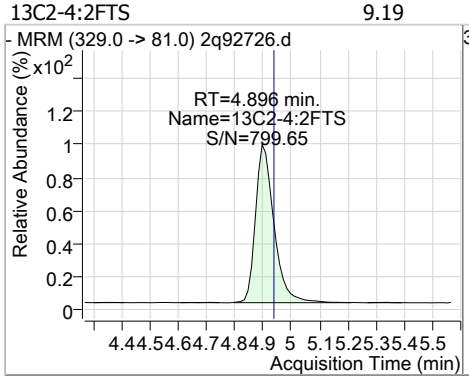
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.53	3.97	-0.04	1173	299.0 -> 99.0	43.9	8.4	68.4

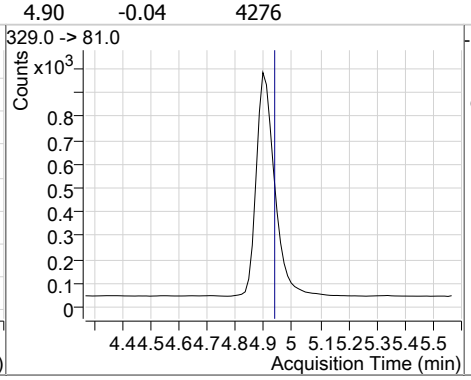


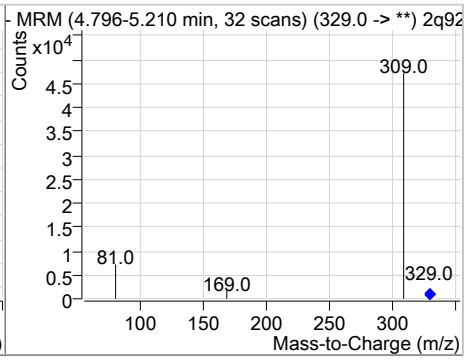




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	9.19	4.90	-0.04	4276				

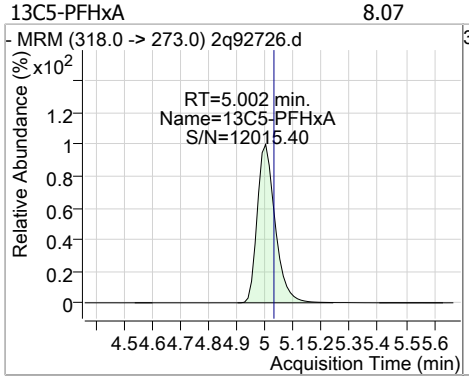


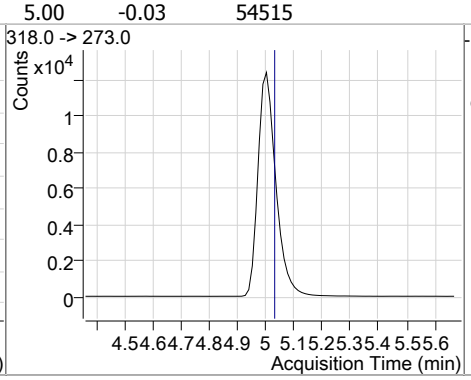


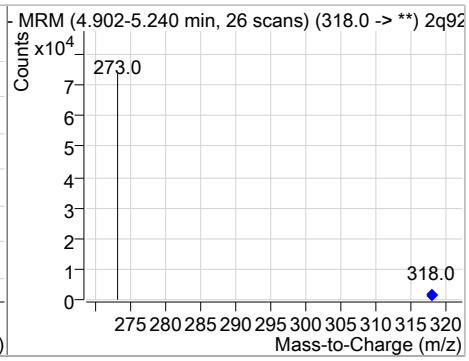


Perfluorinated Compounds by LC/MS/MS

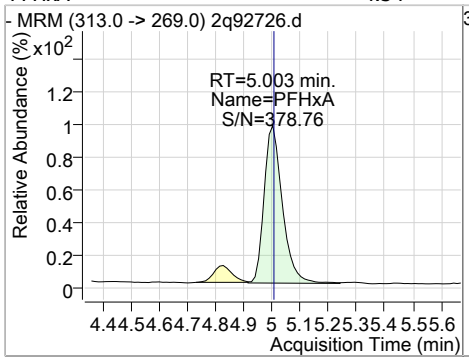
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	8.07	5.00	-0.03	54515				

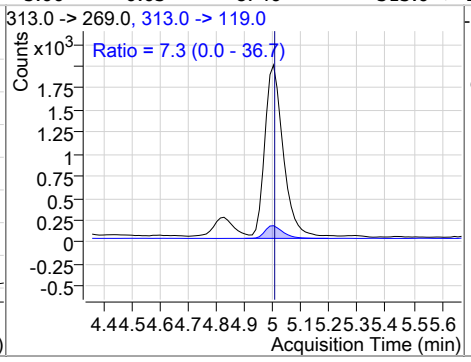


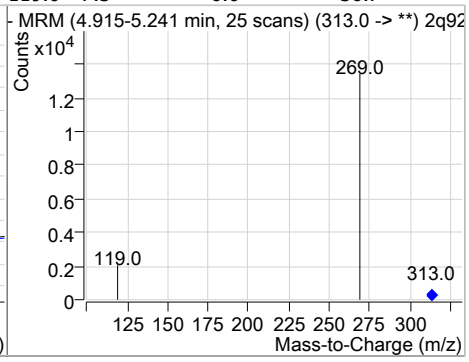




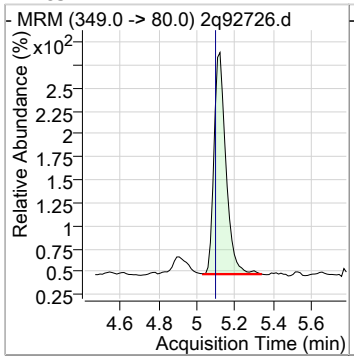
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.34	5.00	-0.03	8746	313.0 -> 119.0	7.3	0.0	36.7

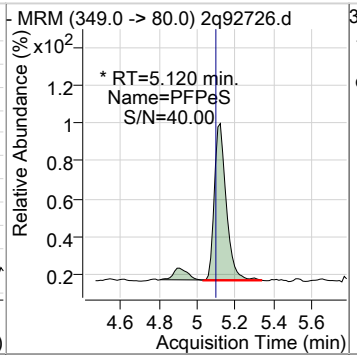


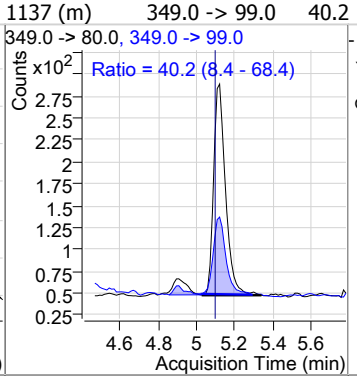


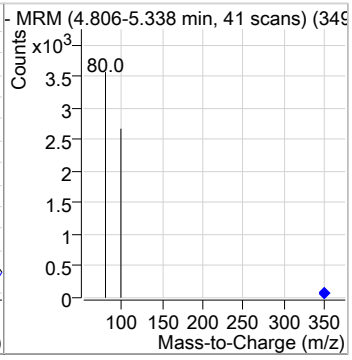


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.17	5.12	-0.03	1137 (m)	349.0 -> 99.0	40.2	8.4	68.4

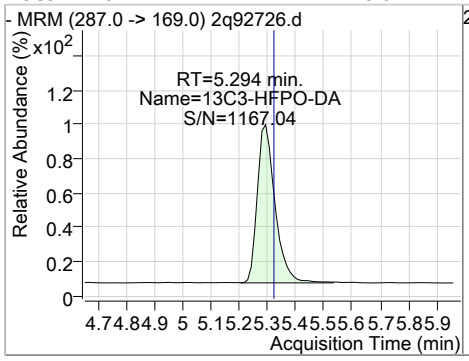


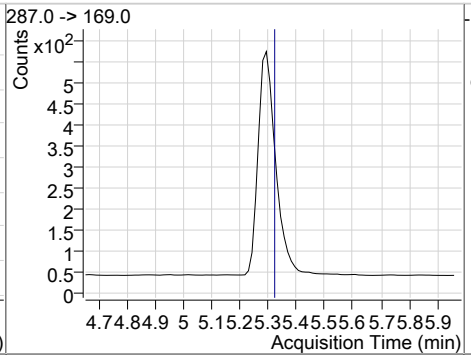


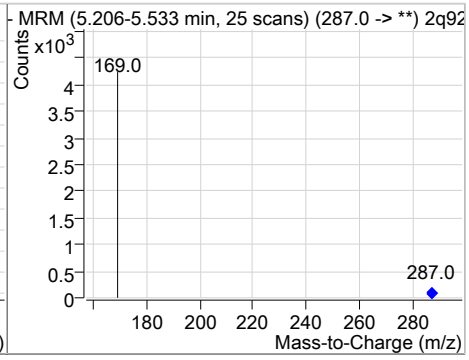




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.87	5.29	-0.03	2310				

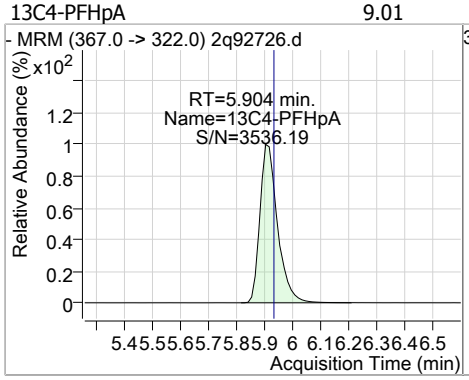


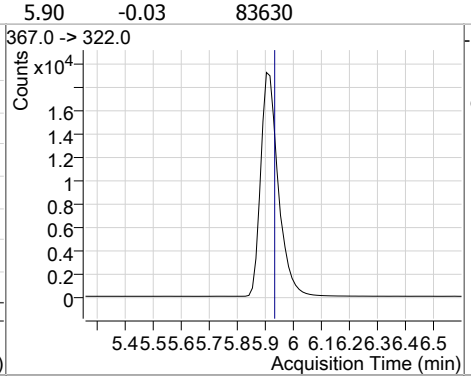


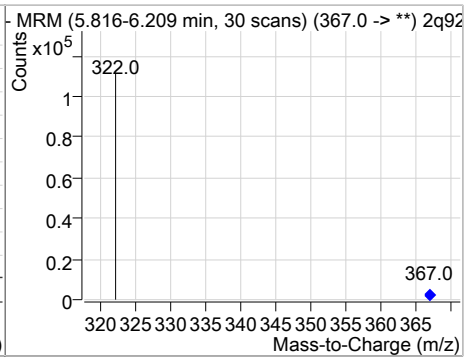


Perfluorinated Compounds by LC/MS/MS

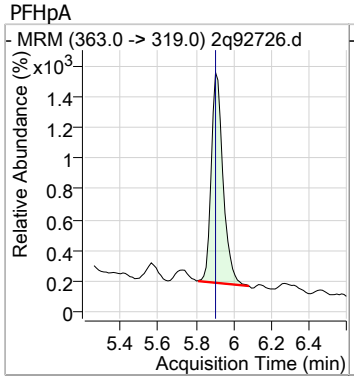
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	9.01	5.90	-0.03	83630				

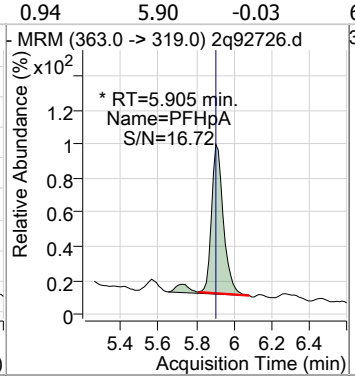


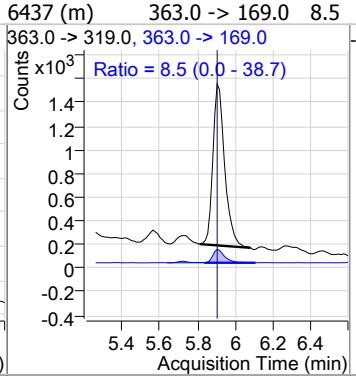


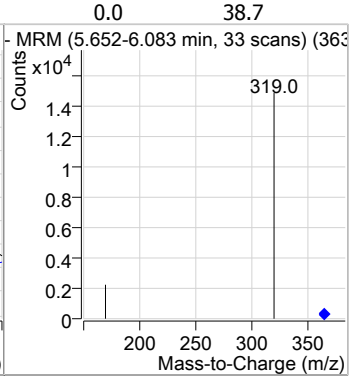


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.94	5.90	-0.03	6437 (m)	363.0 -> 169.0	8.5	0.0	38.7

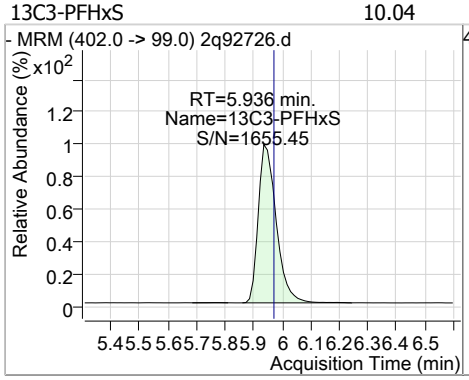


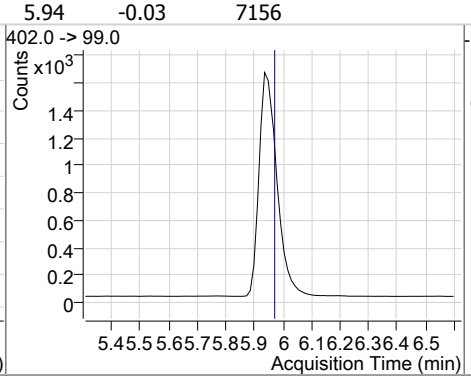


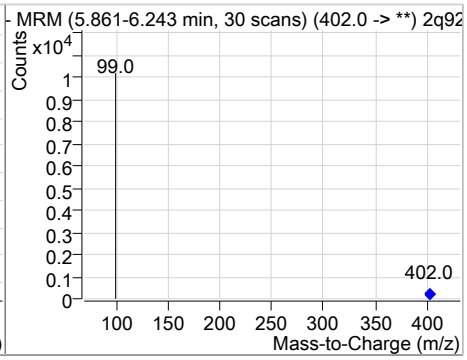




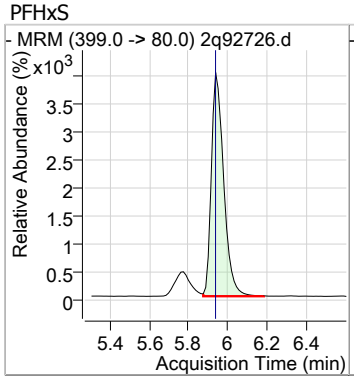
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	10.04	5.94	-0.03	7156				

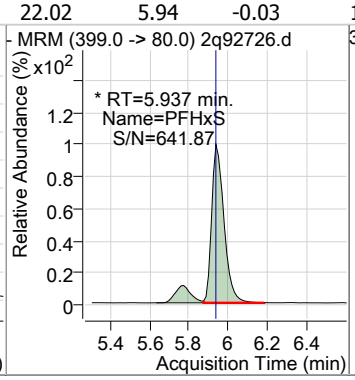


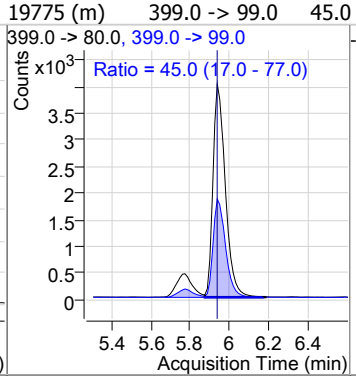


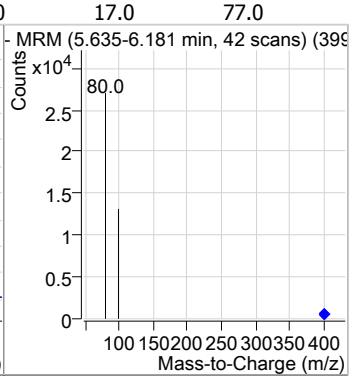


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	22.02	5.94	-0.03	19775 (m)	399.0 -> 99.0	45.0	17.0	77.0



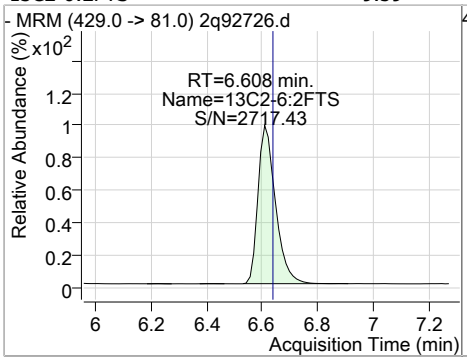


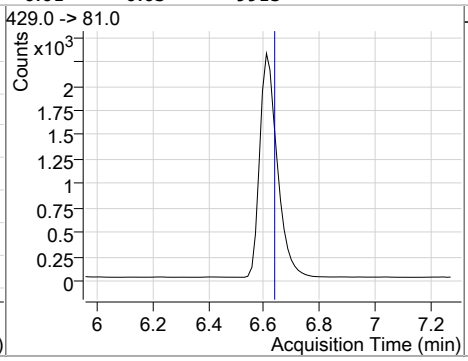


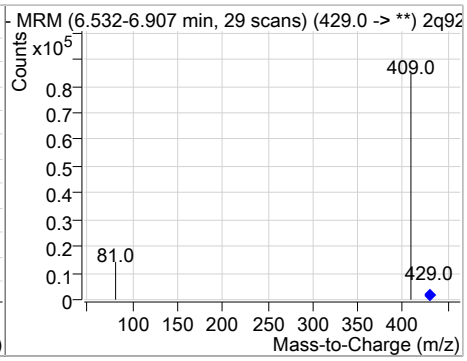


Perfluorinated Compounds by LC/MS/MS

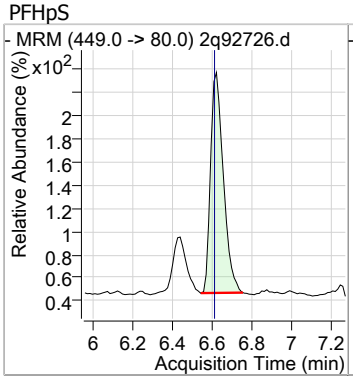
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	9.59	6.61	-0.03	9915				

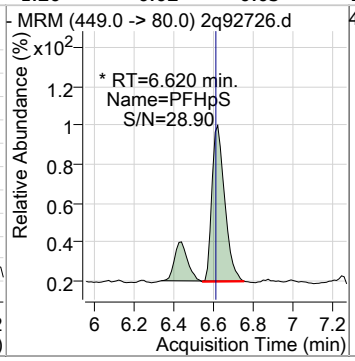


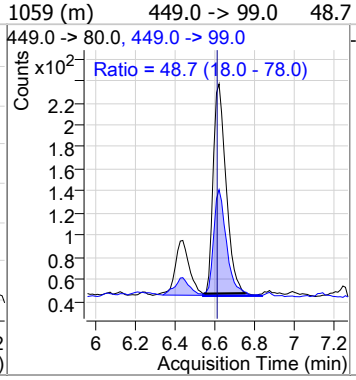


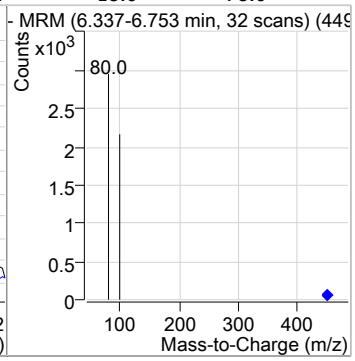


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.26	6.62	-0.03	1059 (m)	449.0 -> 99.0	48.7	18.0	78.0

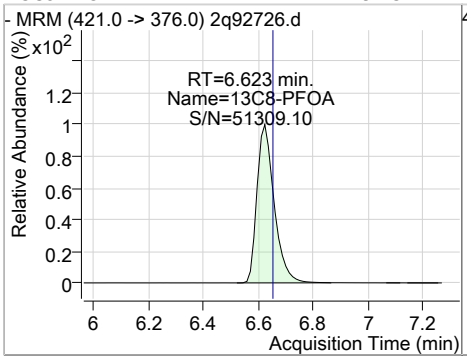


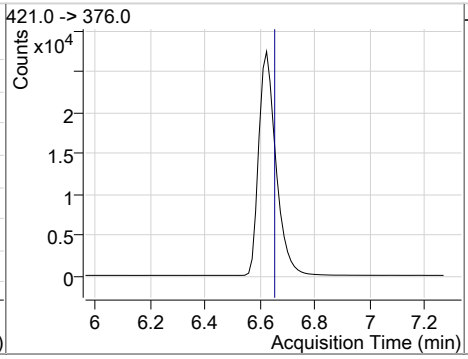


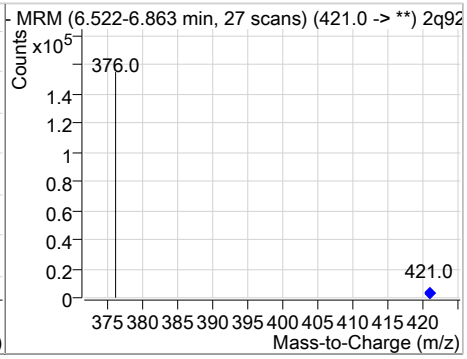




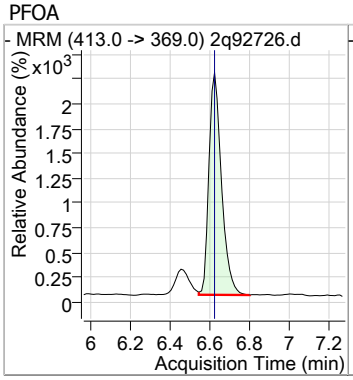
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	9.23	6.62	-0.03	118859				

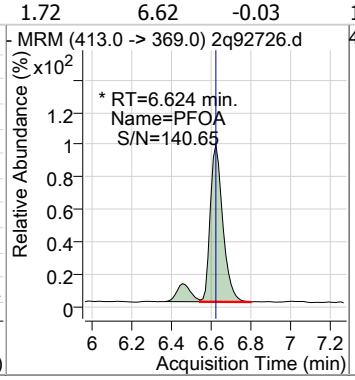


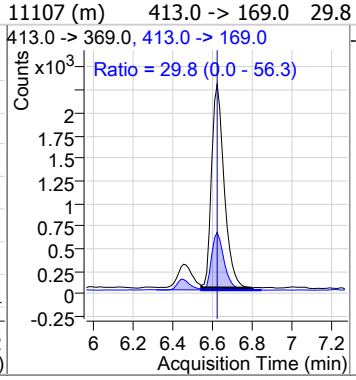


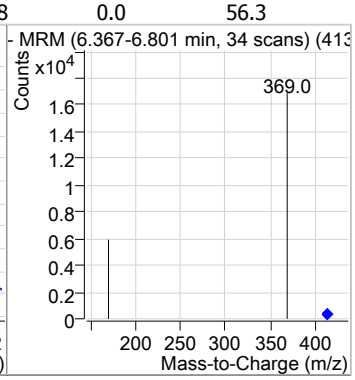


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.72	6.62	-0.03	11107 (m)	413.0 -> 169.0	29.8	0.0	56.3



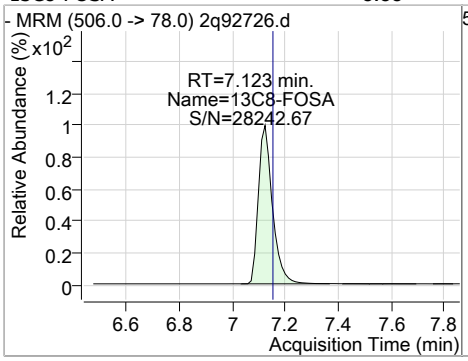


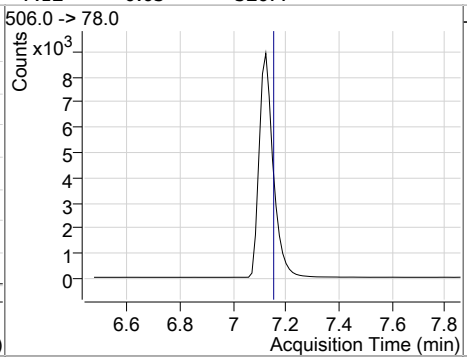


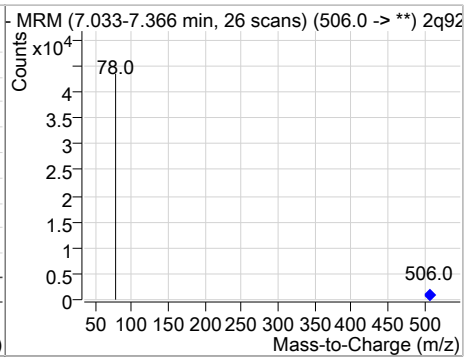


Perfluorinated Compounds by LC/MS/MS

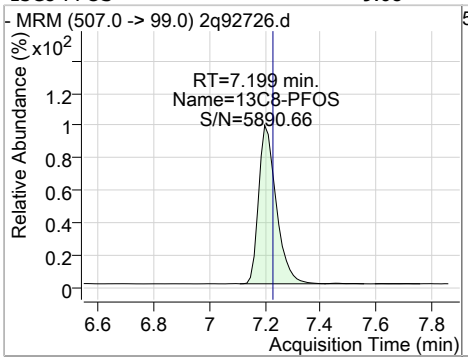
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	8.88	7.12	-0.03	32677				

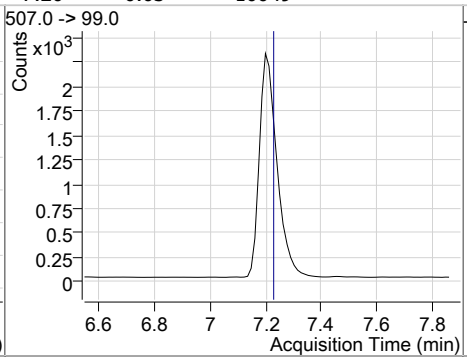


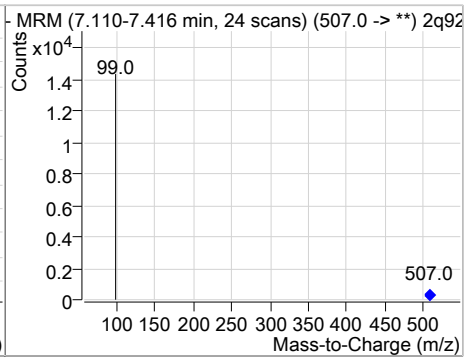




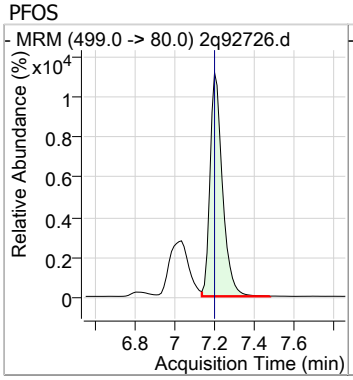
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	9.68	7.20	-0.03	10049				

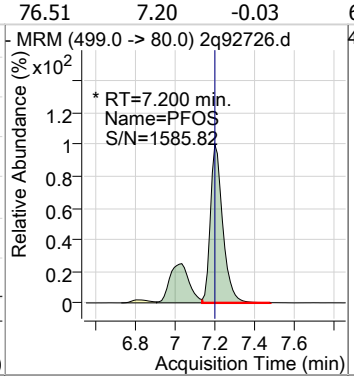


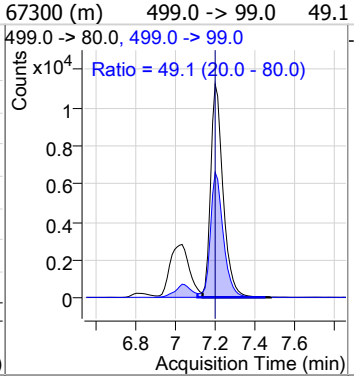


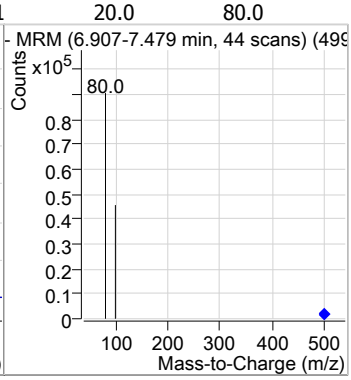


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	76.51	7.20	-0.03	67300 (m)	499.0 -> 99.0	49.1	20.0	80.0

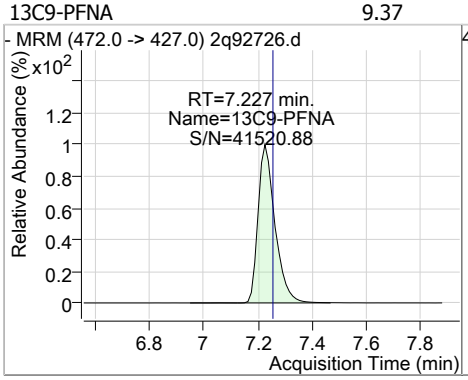


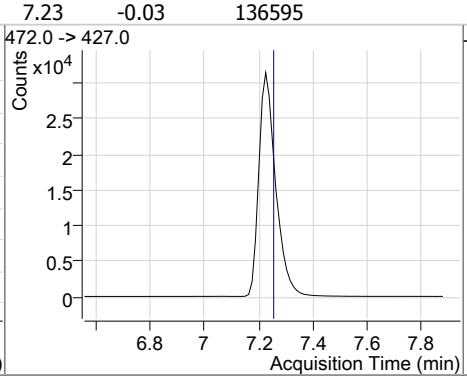


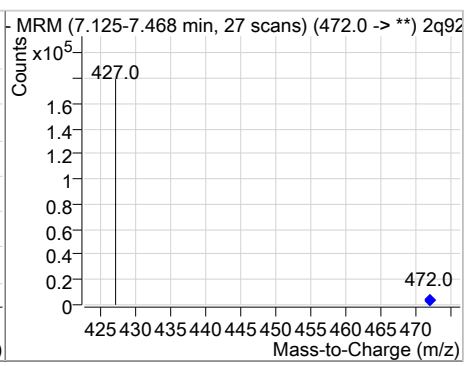




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	9.37	7.23	-0.03	136595				

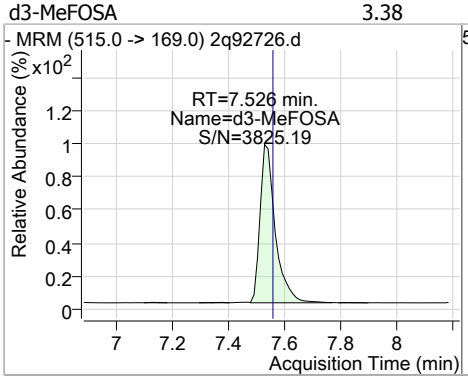


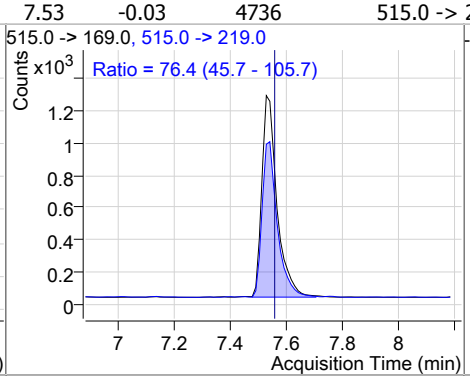


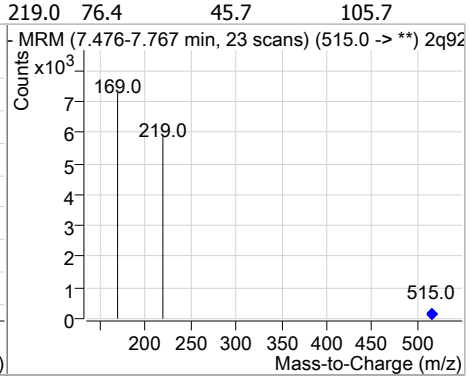


Perfluorinated Compounds by LC/MS/MS

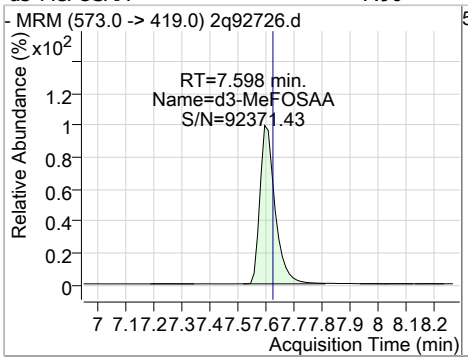
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	3.38	7.53	-0.03	4736	515.0 -> 219.0	76.4	45.7	105.7

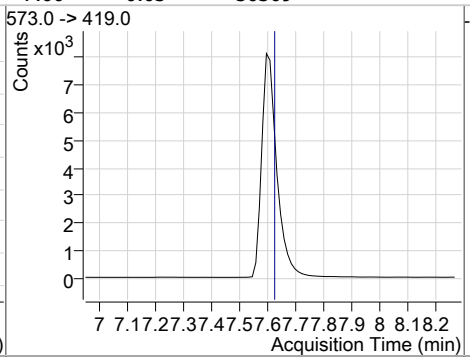


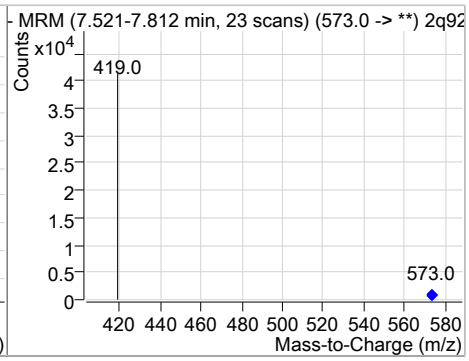




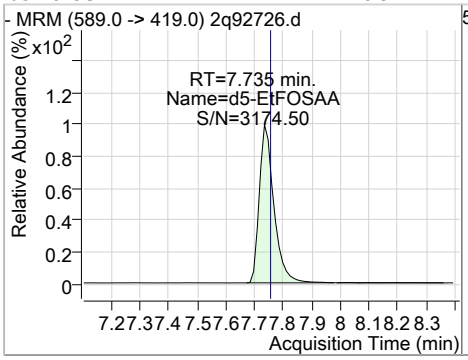
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	7.90	7.60	-0.03	30309				

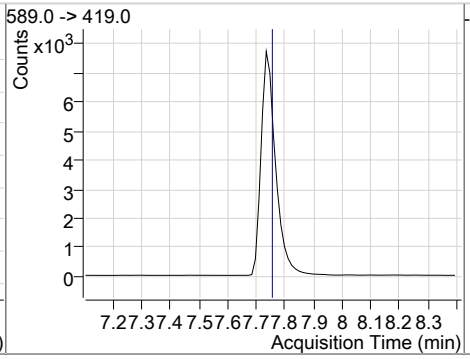


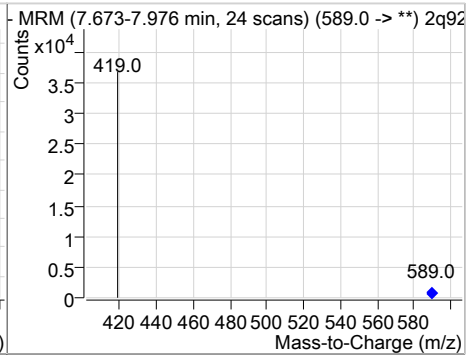




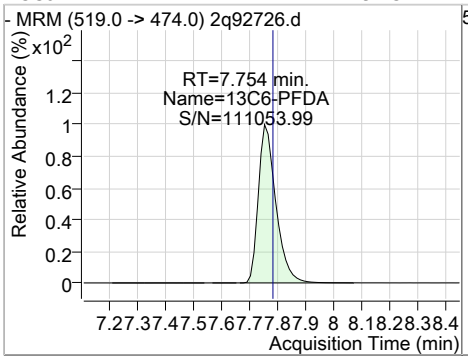
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	8.92	7.74	-0.03	27077				

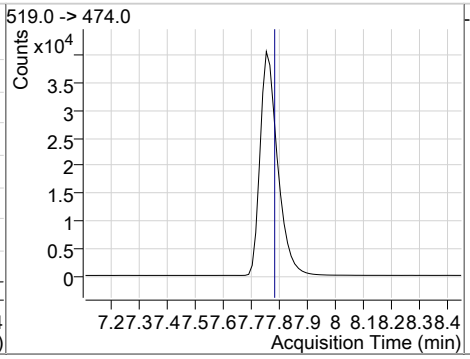


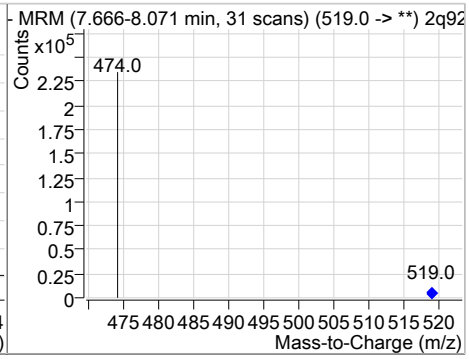




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	9.73	7.75	-0.03	177137				

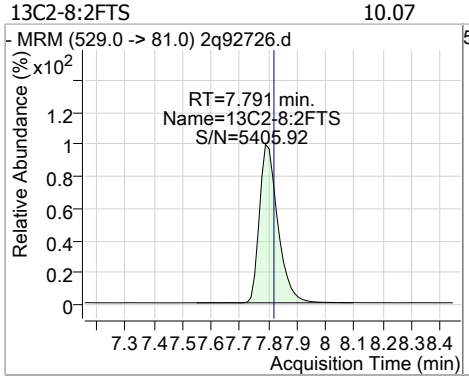


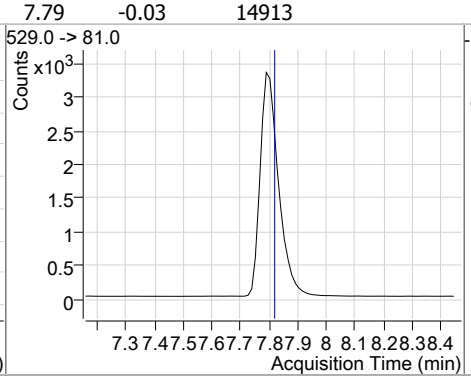


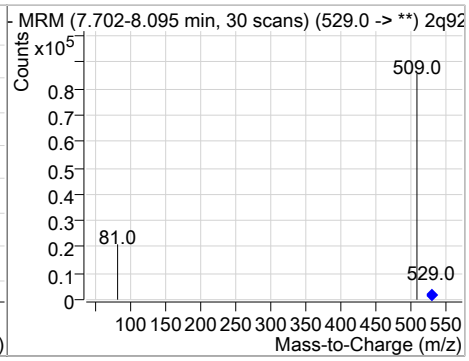


Perfluorinated Compounds by LC/MS/MS

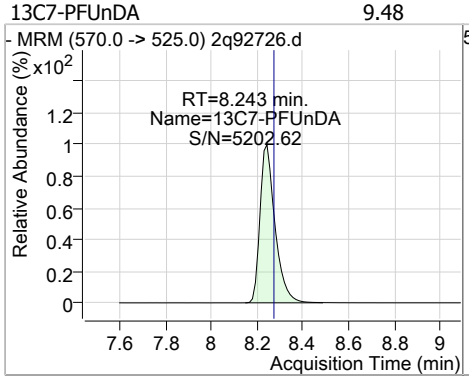
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	10.07	7.79	-0.03	14913				

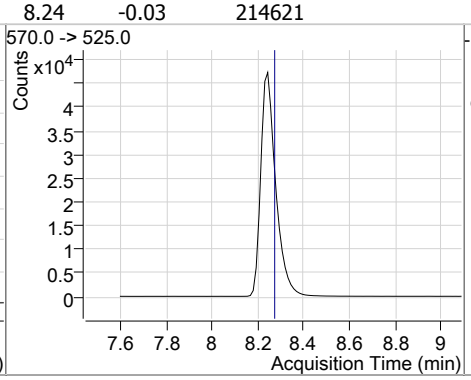


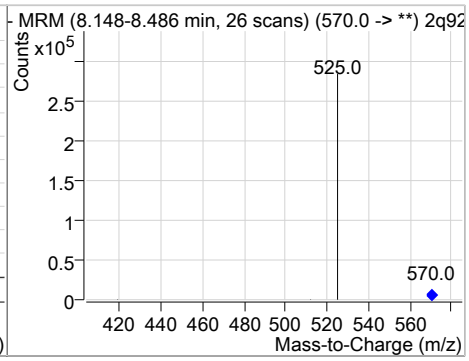




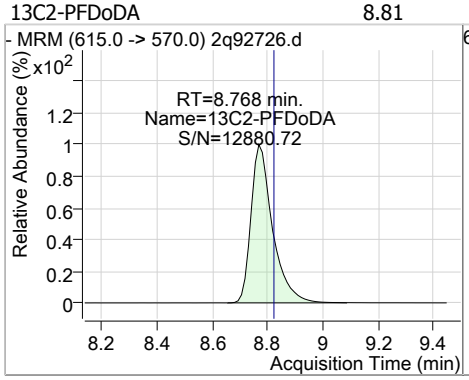
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	9.48	8.24	-0.03	214621				

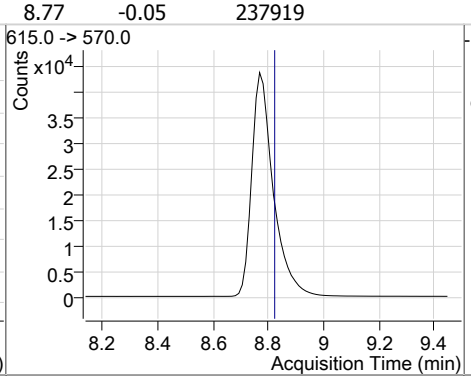


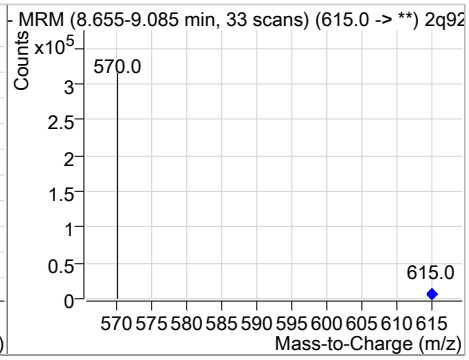




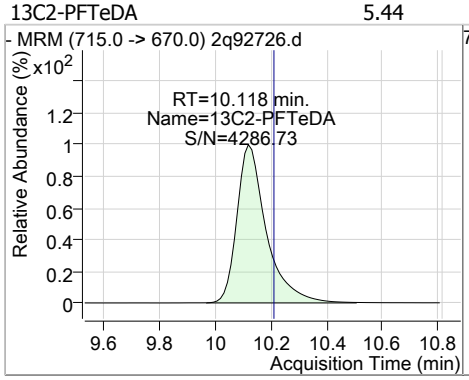
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	8.81	8.77	-0.05	237919				

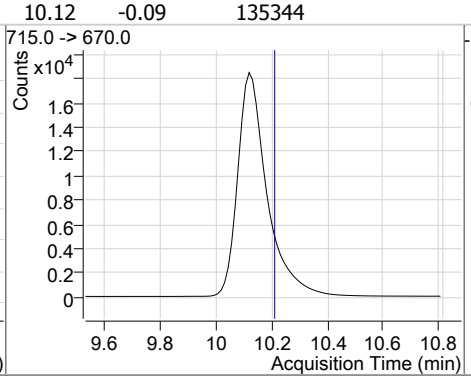


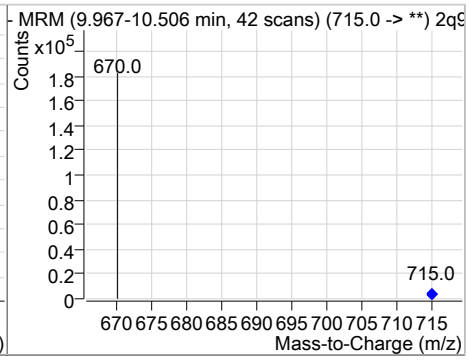




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	5.44	10.12	-0.09	135344				







Manual Integration Approval Summary

Sample Number: FA95742-4
Lab FileID: 2Q92726.D
Injection Time: 06/08/22 13:07
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:09 Natasha Gumtie
Supervisor approved: 06/08/22 15:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		5.12	Split peak
Perfluoroheptanoic acid	375-85-9		5.91	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.62	Split peak
Perfluorooctanoic acid	335-67-1		6.62	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92332.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 11:20:20 PM
Sample Name : FA95742-5
Vial : P6-C3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

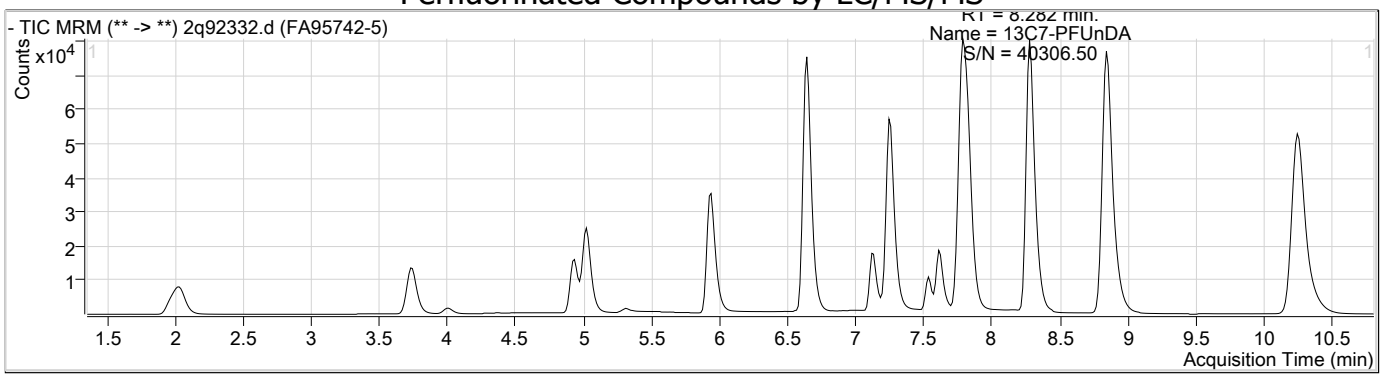
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	50312	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	61387	20.00	µg/L	0.013
M5-PFPeA	3.736	268.0 -> 223.0	70675	20.00	µg/L	0.000
M5-PFHxA	5.027	318.0 -> 273.0	104188	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	148247	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	206551	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	230785	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	293409	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	362045	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	432603	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	387822	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	61387	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	8085	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	11470	20.00	µg/L	0.000
M8-PFOS	7.237	507.0 -> 99.0	16737	20.00	µg/L	0.013
M2-4:2FTS	4.921	329.0 -> 81.0	7301	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	15807	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	22912	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	59711	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4193	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	19038	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	7301	15.69	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C2-6:2FTS	6.634	429.0 -> 81.0	15807	15.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%		
13C2-8:2FTS	7.828	529.0 -> 81.0	22912	15.47	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%		
13C2-PFDoDA	8.845	615.0 -> 570.0	432603	16.02	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.1%		
13C2-PFTeDA	10.243	715.0 -> 670.0	387822	15.58	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%		
13C3-PFBS	4.004	302.0 -> 99.0	8085	15.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C3-PFHxS	5.967	402.0 -> 99.0	11470	16.09	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.4%		
13C4-PFBA	2.027	217.0 -> 172.0	61387	15.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.4%		
13C4-PFHpA	5.941	367.0 -> 322.0	148247	15.97	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%		
d5-EtFOSAA	7.748	589.0 -> 419.0	50312	16.58	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%		
13C5-PFHxA	5.027	318.0 -> 273.0	104188	15.43	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.2%		
13C5-PFPeA	3.736	268.0 -> 223.0	70675	15.51	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

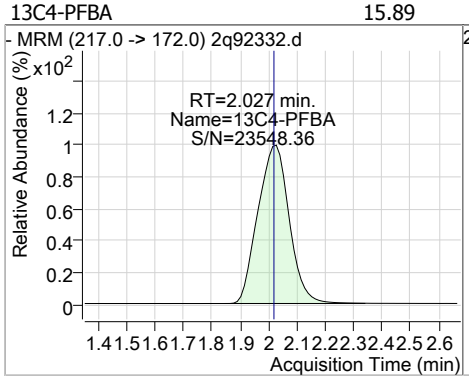
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%	
13C6-PFDA	7.792	519.0 -> 474.0	293409	16.11 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.5%	
13C7-PFUnDA	8.282	570.0 -> 525.0	362045	16.00 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.0%	
13C8-FOSA	7.124	506.0 -> 78.0	61387	16.68 µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.4%	
13C8-PFOA	6.649	421.0 -> 376.0	206551	16.04 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.2%	
13C8-PFOS	7.237	507.0 -> 99.0	16737	16.13 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.6%	
13C9-PFNA	7.252	472.0 -> 427.0	230785	15.82 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.1%	
d3-MeFOSAA	7.610	573.0 -> 419.0	59711	15.57 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%	
13C3-HFPO-DA	5.319	287.0 -> 169.0	4193	16.10 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.5%	
d3-MeFOSA	7.539	515.0 -> 169.0	19038	13.60 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.0%	
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	
MeFOSA	-	512.0 -> 219.0	-	N.D.	

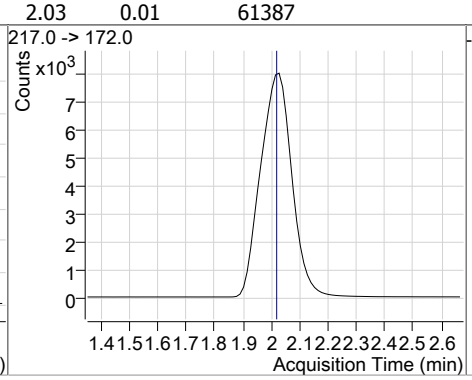
= Qualifier out of range, m = manually integrated, + = Area summed

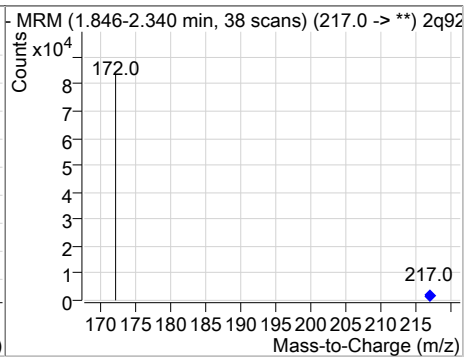
Perfluorinated Compounds by LC/MS/MS



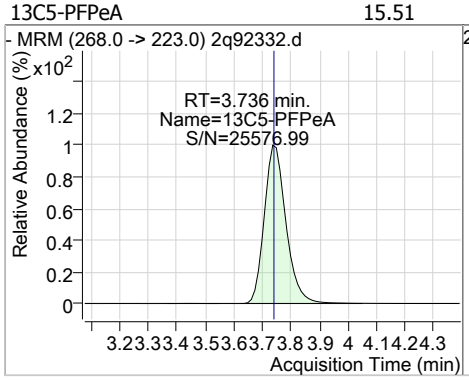
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.89	2.03	0.01	61387				

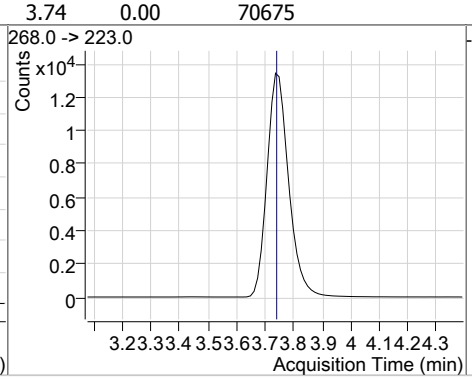


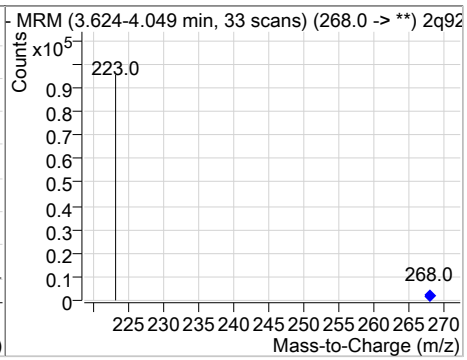




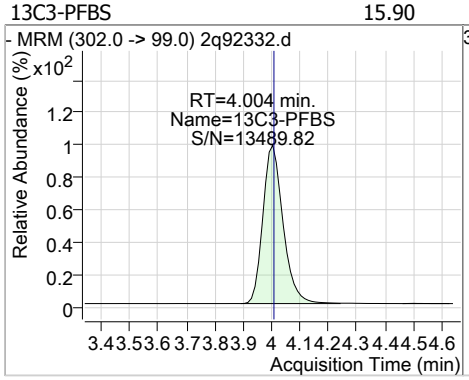
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.51	3.74	0.00	70675				

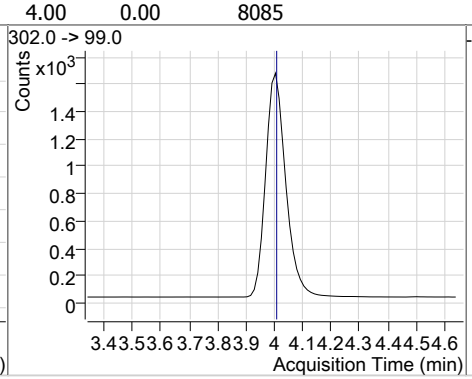


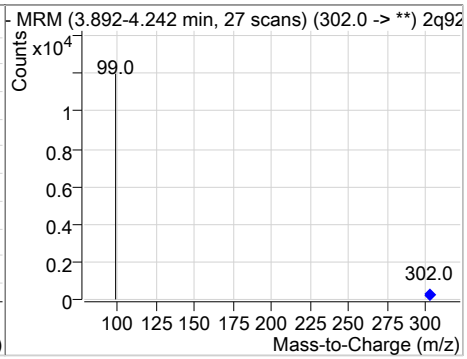




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.90	4.00	0.00	8085				

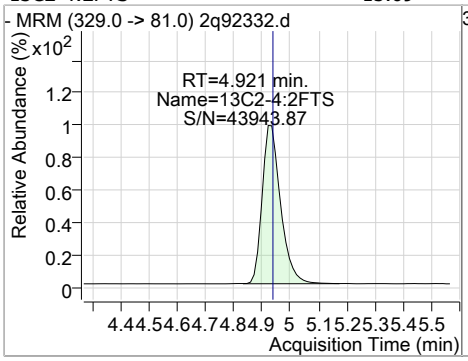


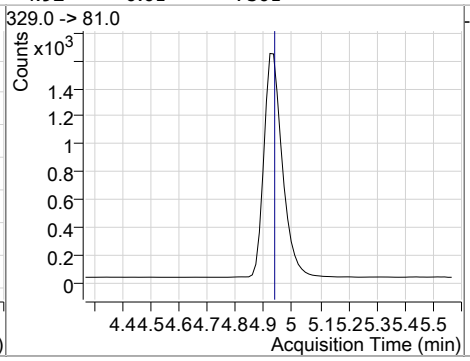


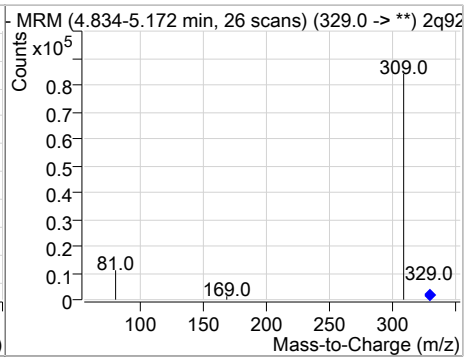


Perfluorinated Compounds by LC/MS/MS

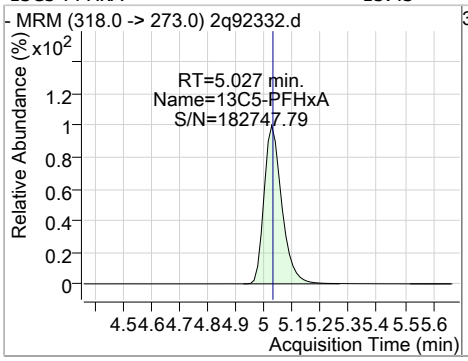
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.69	4.92	-0.01	7301				

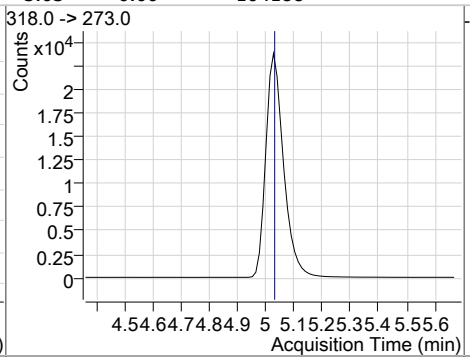


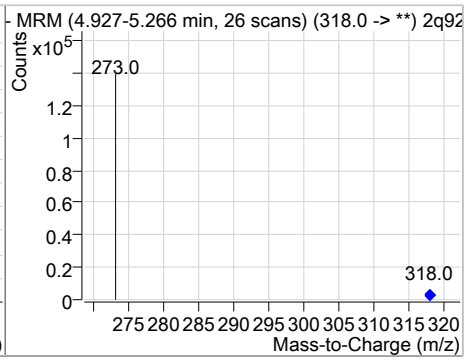




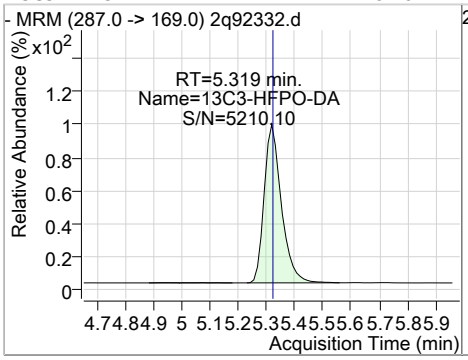
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.43	5.03	0.00	104188				

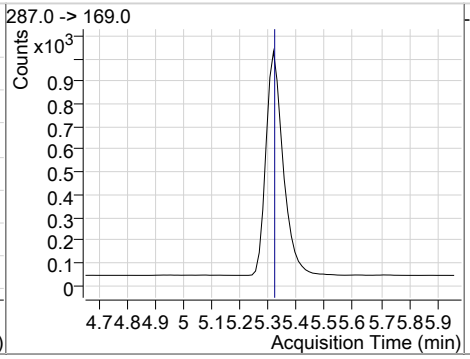


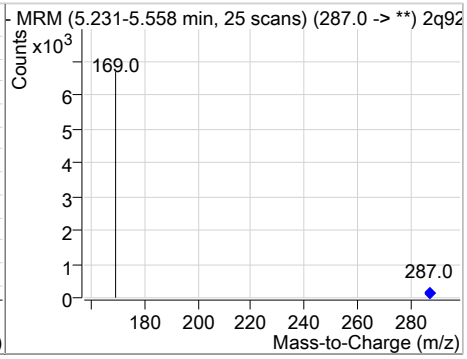




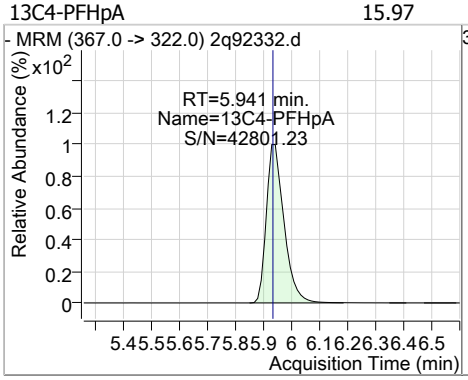
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	16.10	5.32	0.00	4193				

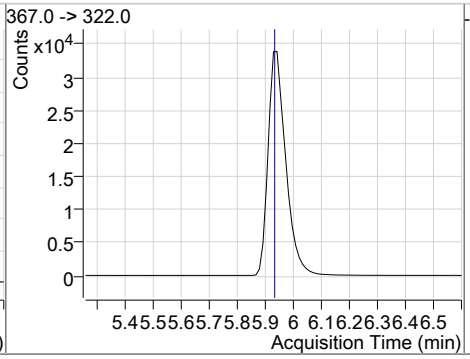


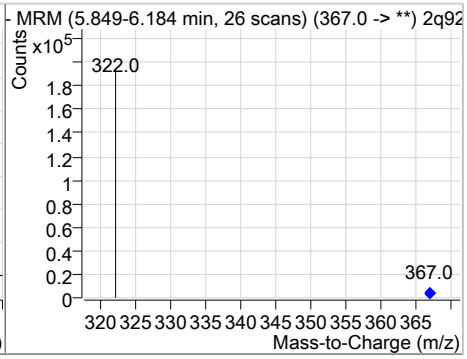




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.97	5.94	0.01	148247				

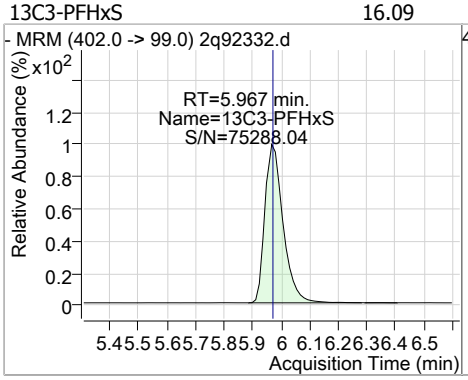


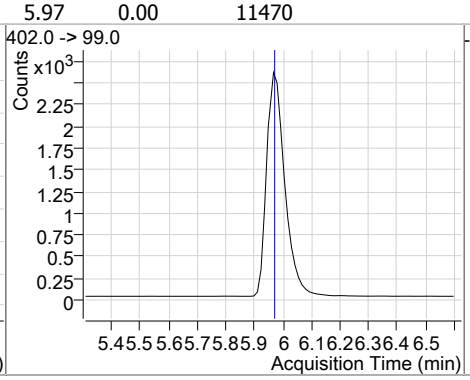


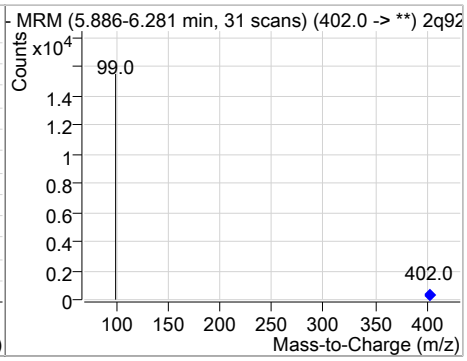


Perfluorinated Compounds by LC/MS/MS

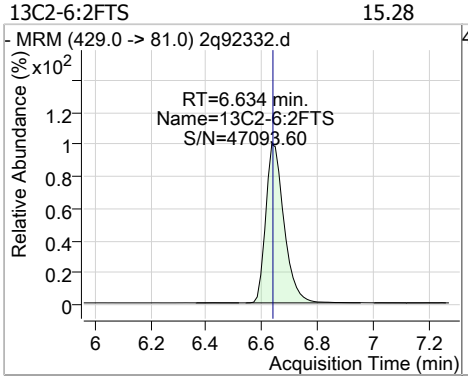
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.09	5.97	0.00	11470				

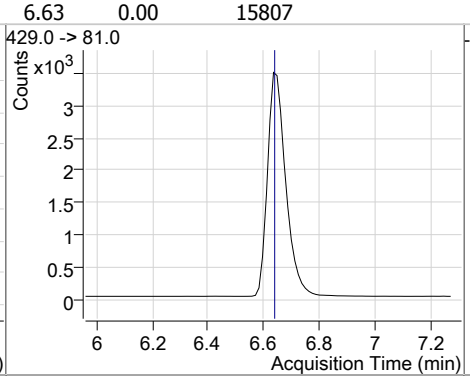


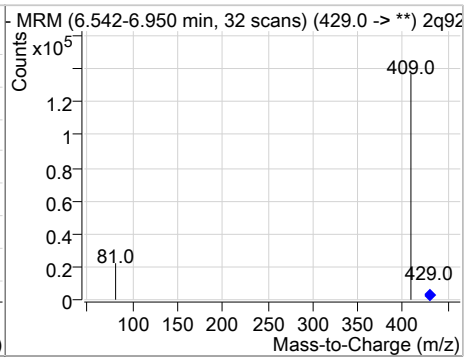




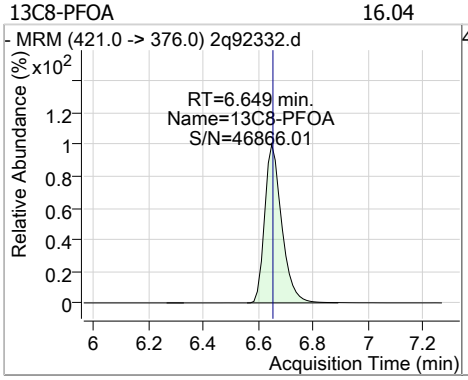
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.28	6.63	0.00	15807				

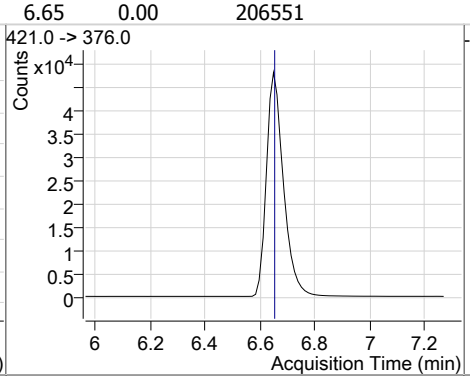


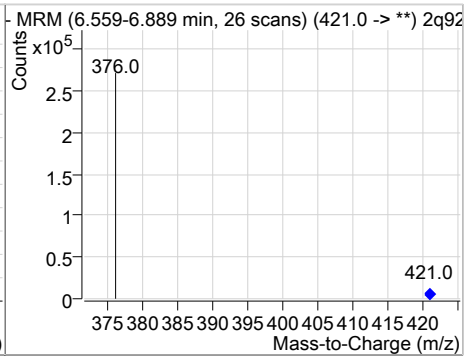




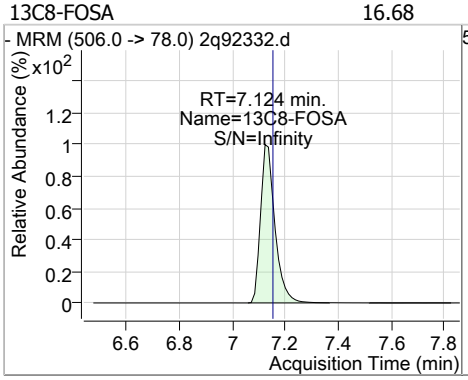
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.04	6.65	0.00	206551				

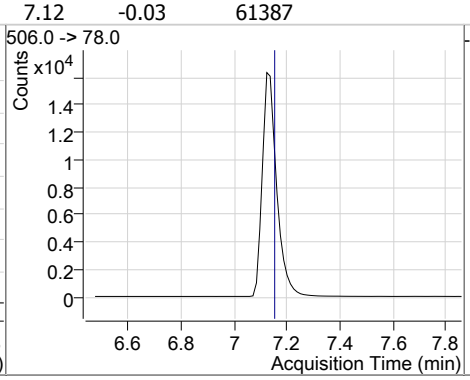


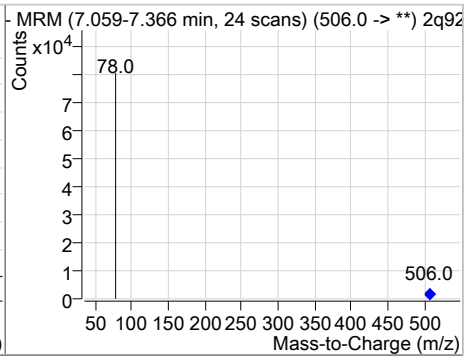




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.68	7.12	-0.03	61387				

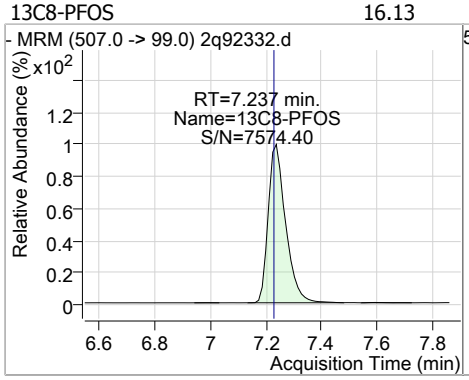


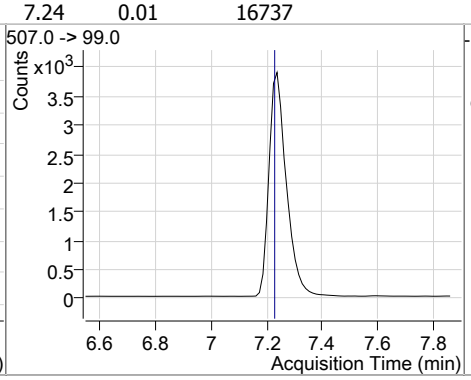


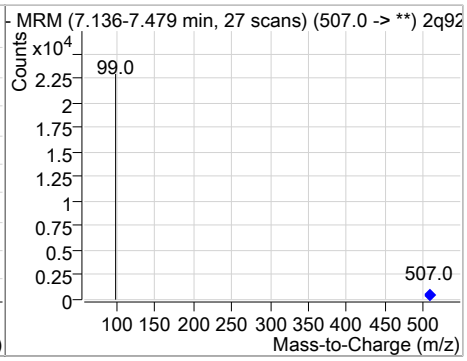


Perfluorinated Compounds by LC/MS/MS

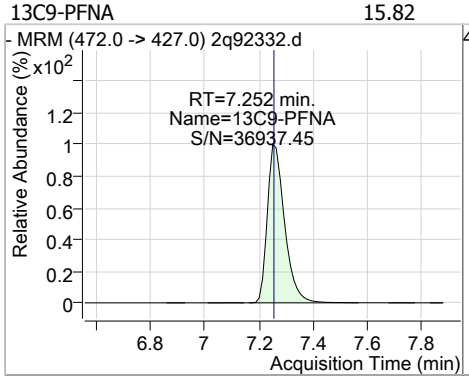
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.13	7.24	0.01	16737				

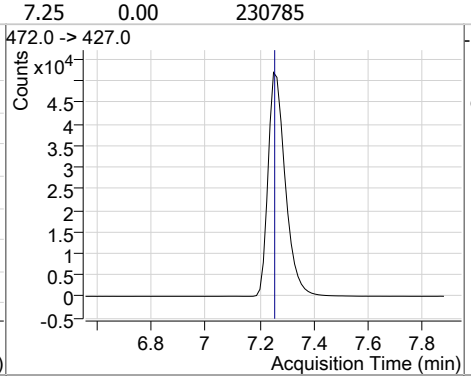


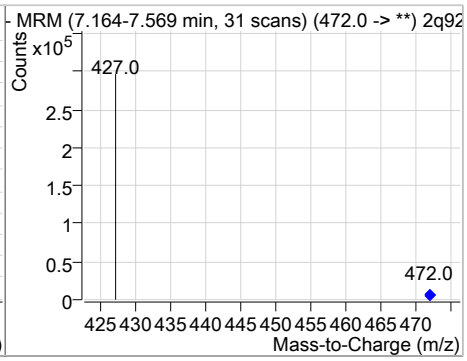




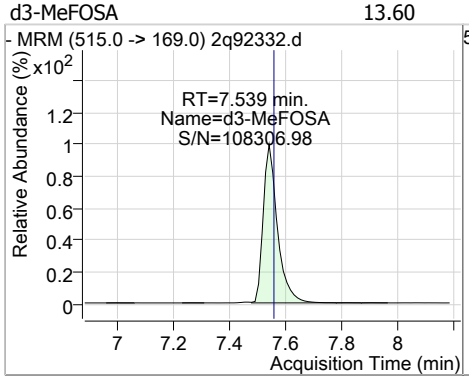
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	15.82	7.25	0.00	230785				

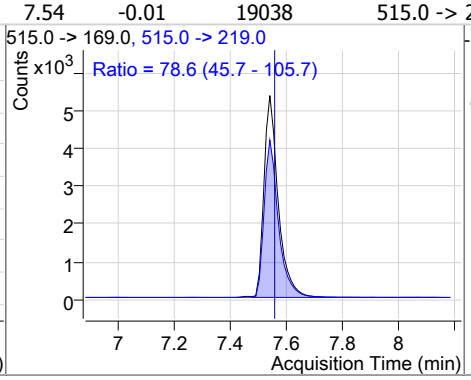


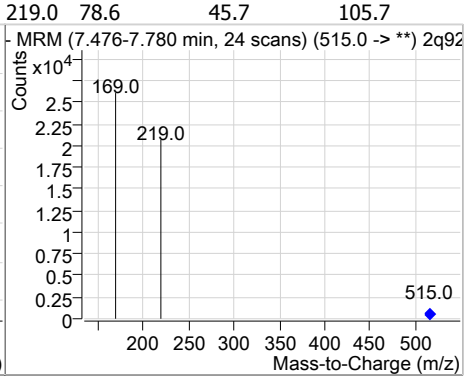




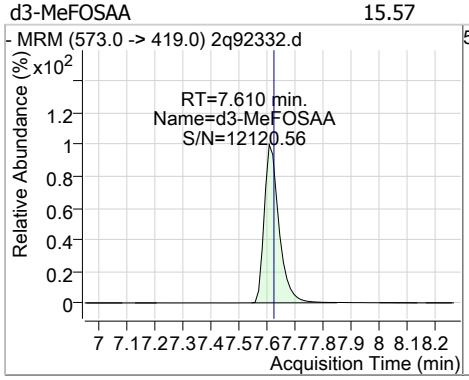
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	13.60	7.54	-0.01	19038	515.0 -> 219.0	78.6	45.7	105.7

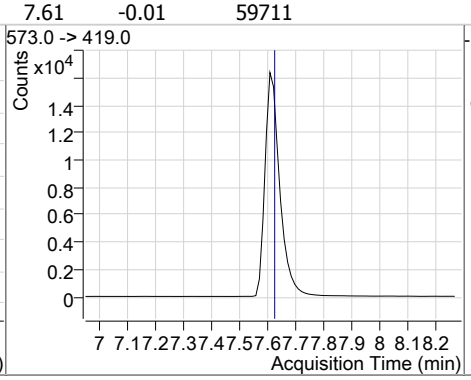


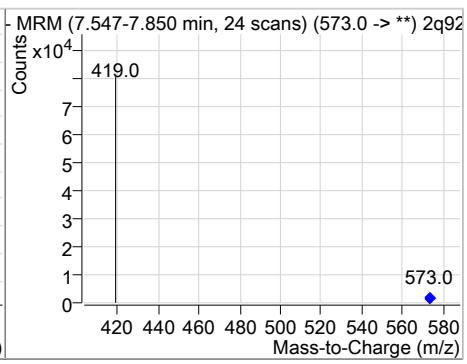




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.57	7.61	-0.01	59711				

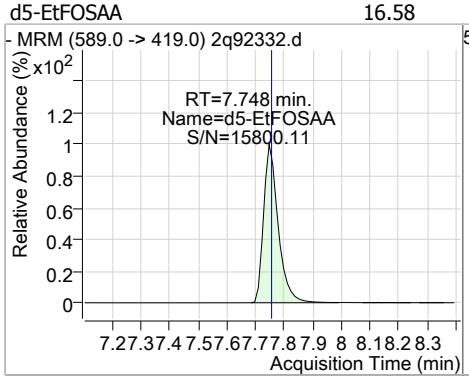


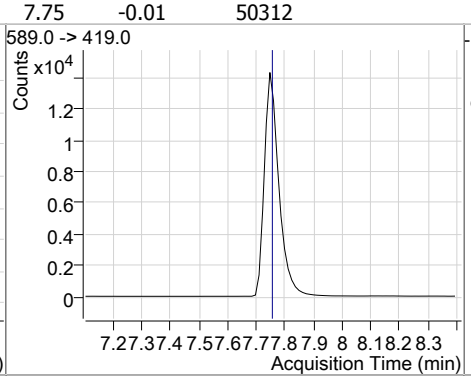


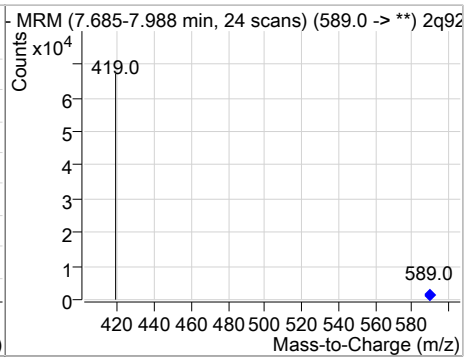


Perfluorinated Compounds by LC/MS/MS

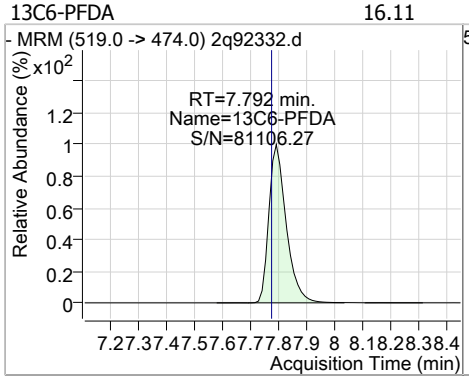
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	16.58	7.75	-0.01	50312				

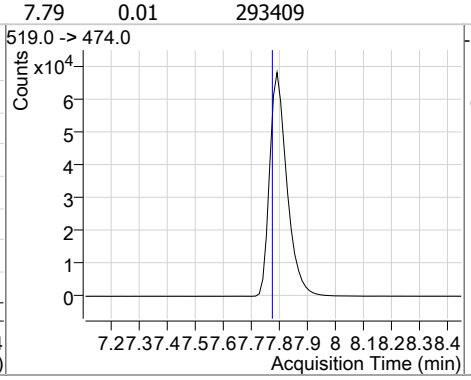


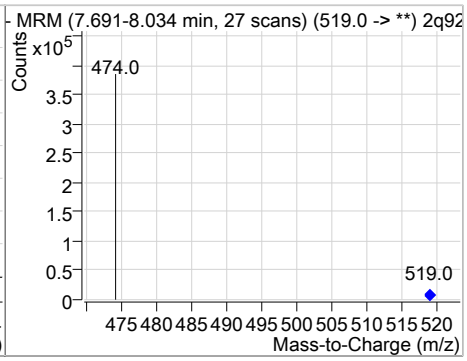




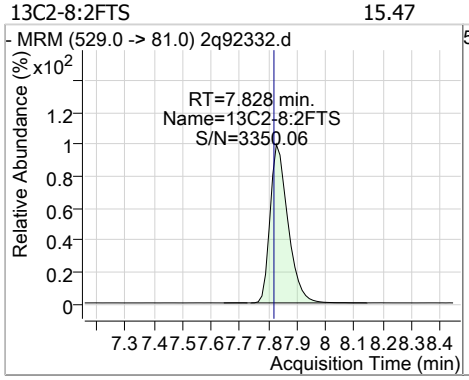
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.11	7.79	0.01	293409				

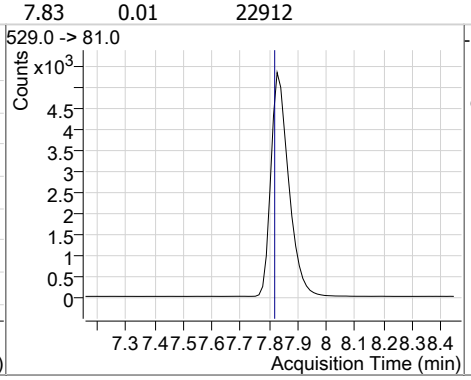


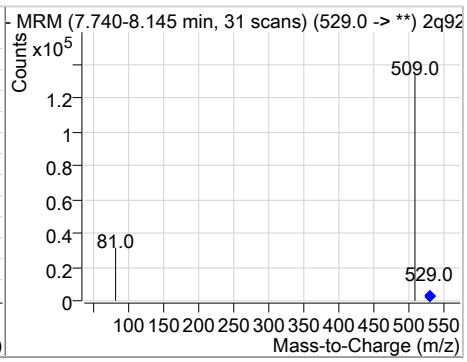




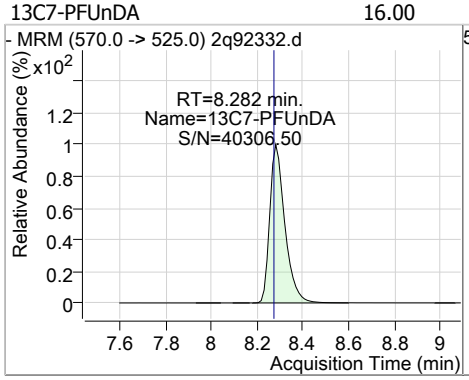
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.47	7.83	0.01	22912				

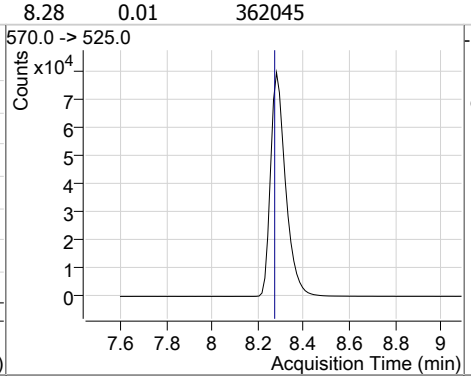


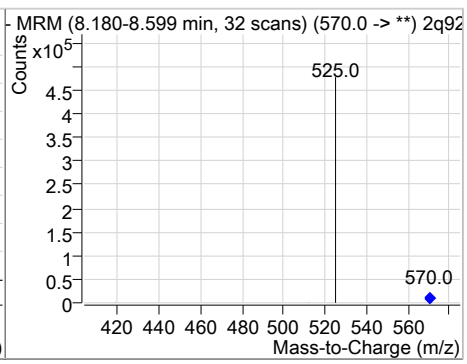




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.00	8.28	0.01	362045				

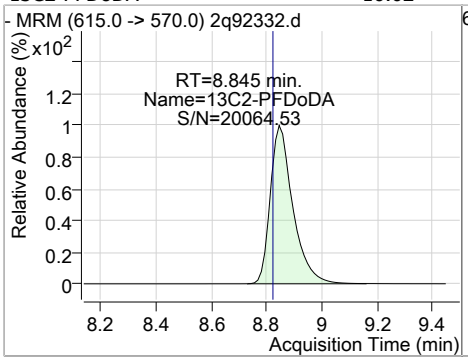


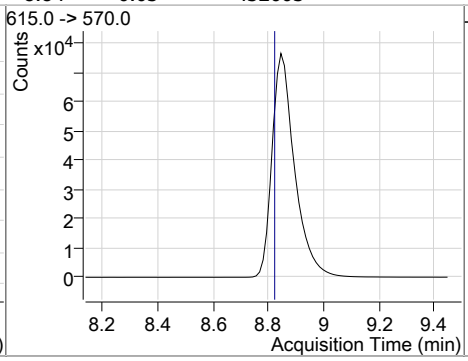


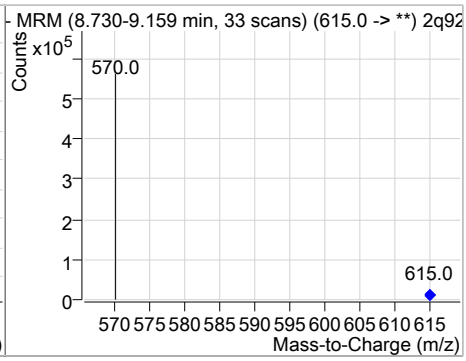


Perfluorinated Compounds by LC/MS/MS

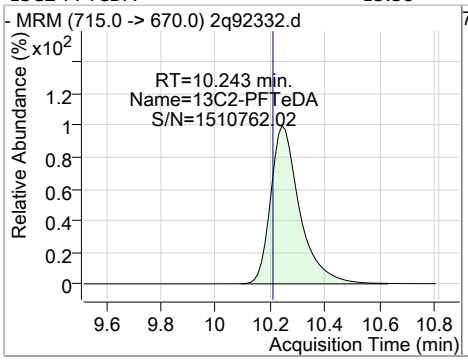
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.02	8.84	0.03	432603				

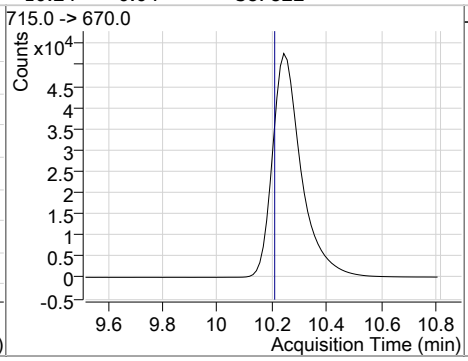


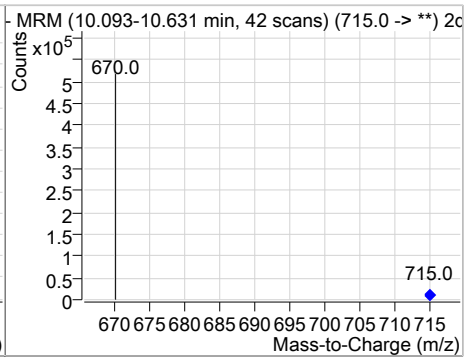




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.58	10.24	0.04	387822				







Perfluorinated Compounds by LC/MS/MS

Data File : 2q92333.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 11:39:05 PM
Sample Name : FA95742-6
Vial : P6-C4
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

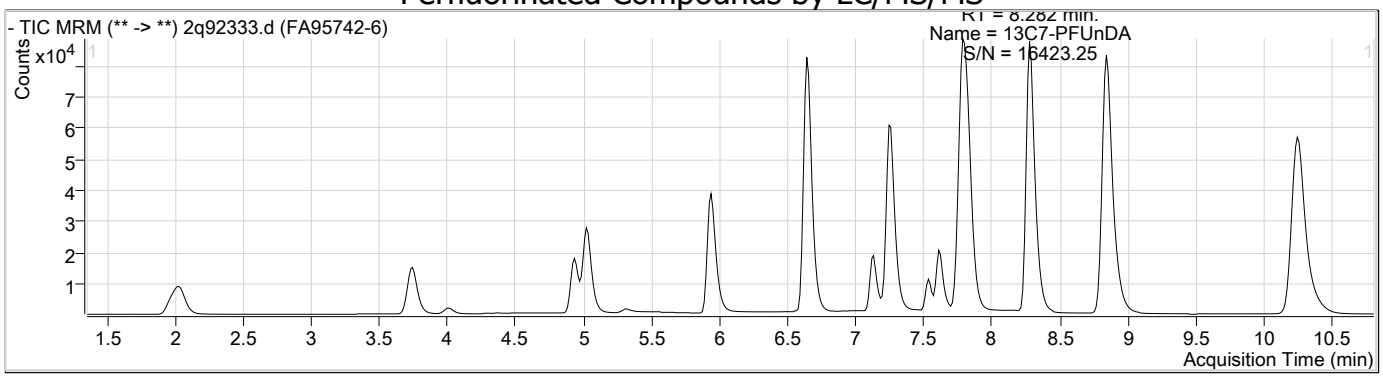
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	55981	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	68546	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	77952	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	115617	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	162407	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	228566	20.00	µg/L	0.000
M9-PFNA	7.265	472.0 -> 427.0	250229	20.00	µg/L	0.013
M6-PFDA	7.792	519.0 -> 474.0	326355	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	395139	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	469627	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	421198	20.00	µg/L	0.038
M8-FOSA	7.136	506.0 -> 78.0	64731	20.00	µg/L	-0.013
M3-PFBS	4.004	302.0 -> 99.0	9019	20.00	µg/L	0.000
M3-PFHxS	5.979	402.0 -> 99.0	12954	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	17953	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	8188	20.00	µg/L	0.000
M2-6:2FTS	6.646	429.0 -> 81.0	17917	20.00	µg/L	0.013
M2-8:2FTS	7.829	529.0 -> 81.0	25259	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	66165	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4438	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	19687	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8188	17.60	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.0%		
13C2-6:2FTS	6.646	429.0 -> 81.0	17917	17.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.6%		
13C2-8:2FTS	7.829	529.0 -> 81.0	25259	17.06	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.3%		
13C2-PFDoDA	8.845	615.0 -> 570.0	469627	17.39	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%		
13C2-PFTeDA	10.243	715.0 -> 670.0	421198	16.92	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.6%		
13C3-PFBS	4.004	302.0 -> 99.0	9019	17.73	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C3-PFHxS	5.979	402.0 -> 99.0	12954	18.17	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.9%		
13C4-PFBA	2.027	217.0 -> 172.0	68546	17.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C4-PFHpA	5.941	367.0 -> 322.0	162407	17.49	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%		
d5-EtFOSAA	7.748	589.0 -> 419.0	55981	18.44	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C5-PFHxA	5.027	318.0 -> 273.0	115617	17.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.6%		
13C5-PFPeA	3.749	268.0 -> 223.0	77952	17.10	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

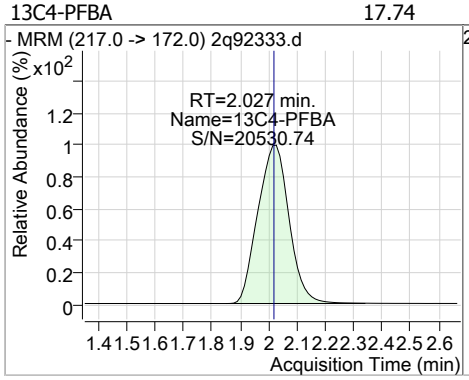
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.5%	
13C6-PFDA	7.792	519.0 -> 474.0	326355	17.92 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.6%	
13C7-PFUnDA	8.282	570.0 -> 525.0	395139	17.46 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.3%	
13C8-FOSA	7.136	506.0 -> 78.0	64731	17.59 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%	
13C8-PFOA	6.649	421.0 -> 376.0	228566	17.75 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C8-PFOS	7.237	507.0 -> 99.0	17953	17.30 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.5%	
13C9-PFNA	7.265	472.0 -> 427.0	250229	17.16 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.8%	
d3-MeFOSAA	7.610	573.0 -> 419.0	66165	17.25 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%	
13C3-HFPO-DA	5.319	287.0 -> 169.0	4438	17.04 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.2%	
d3-MeFOSA	7.539	515.0 -> 169.0	19687	14.07 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.3%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	
MeFOSA	-	512.0 -> 219.0	-	N.D.	

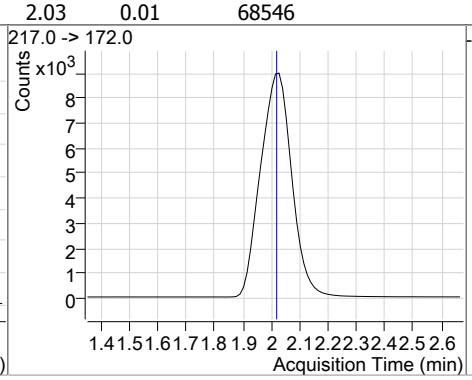
= Qualifier out of range, m = manually integrated, + = Area summed

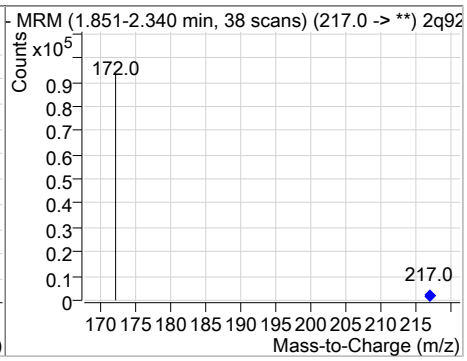
Perfluorinated Compounds by LC/MS/MS



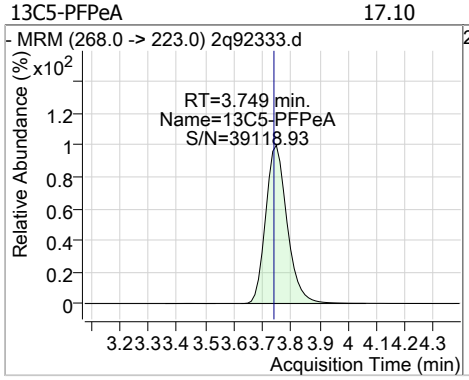
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.74	2.03	0.01	68546				

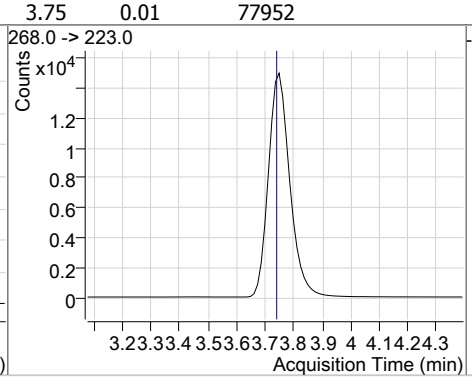


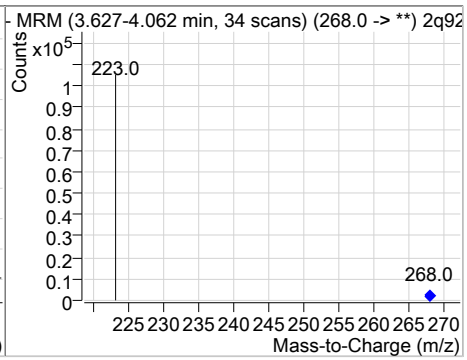




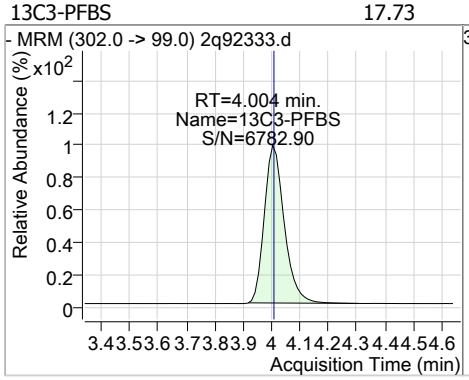
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.10	3.75	0.01	77952				

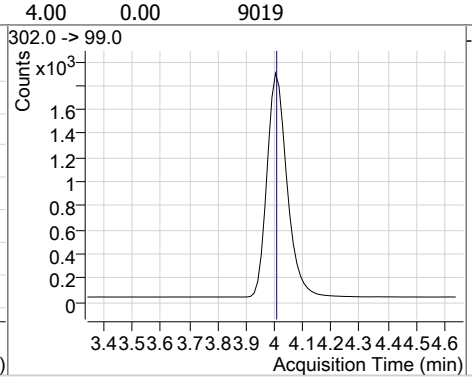


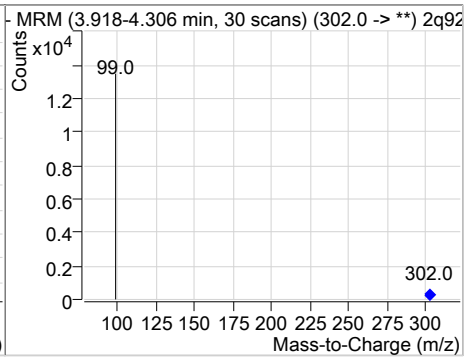




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.73	4.00	0.00	9019				

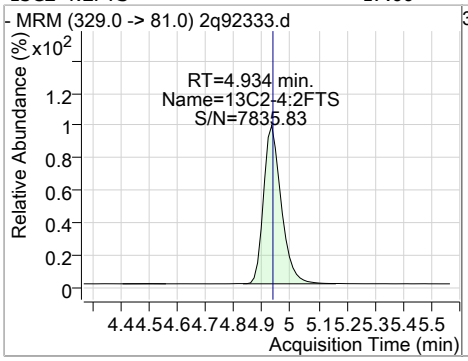


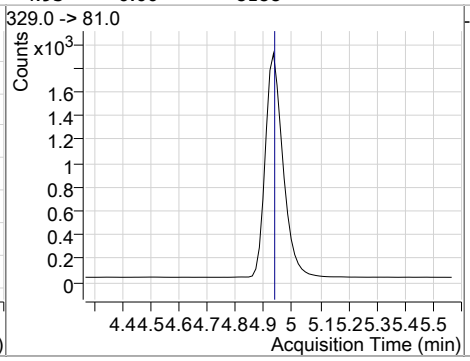


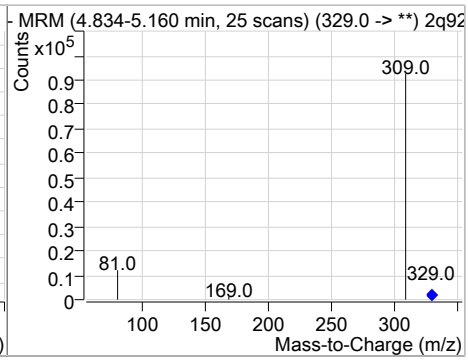


Perfluorinated Compounds by LC/MS/MS

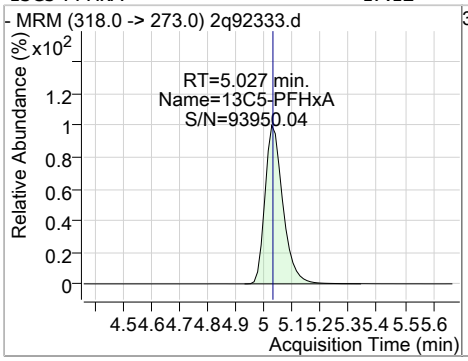
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.60	4.93	0.00	8188				

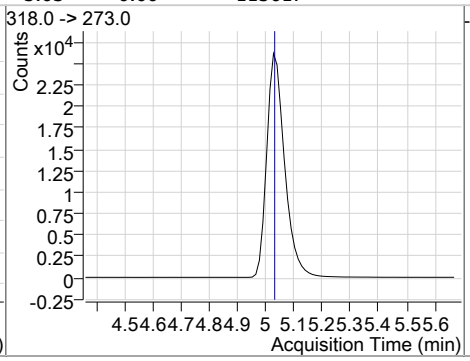


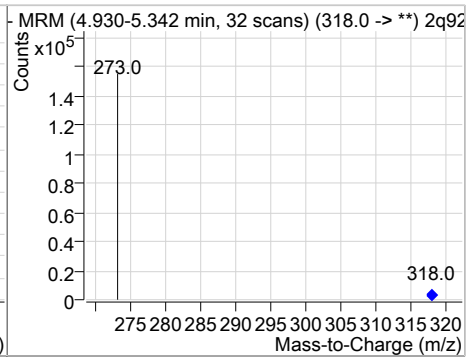




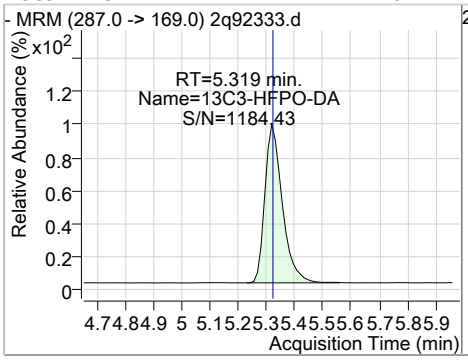
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.12	5.03	0.00	115617				

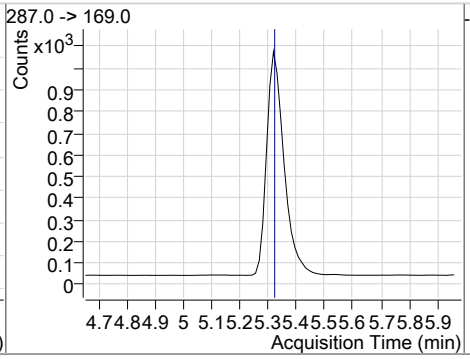


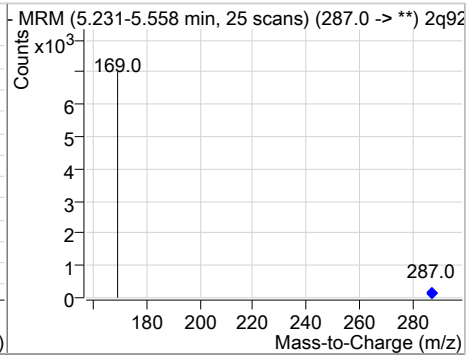




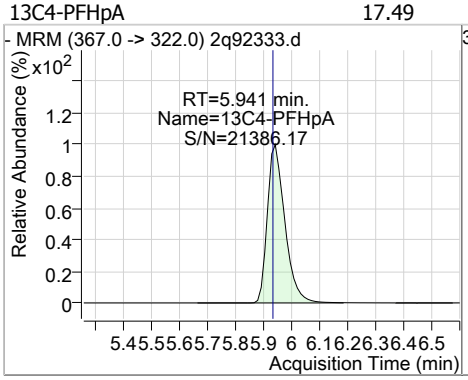
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	17.04	5.32	0.00	4438				

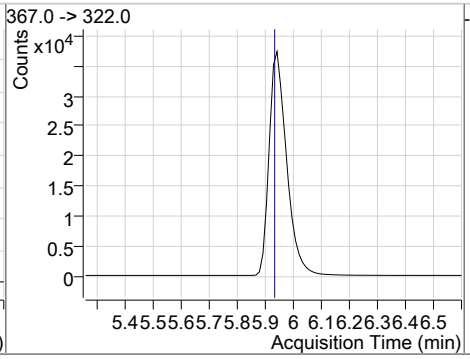


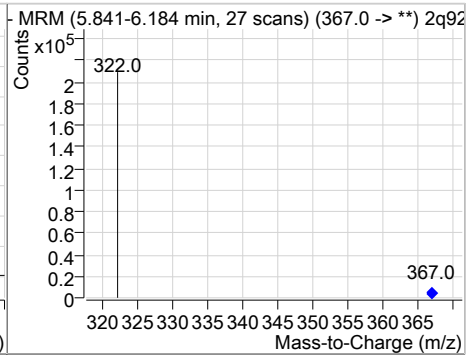




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.49	5.94	0.01	162407				

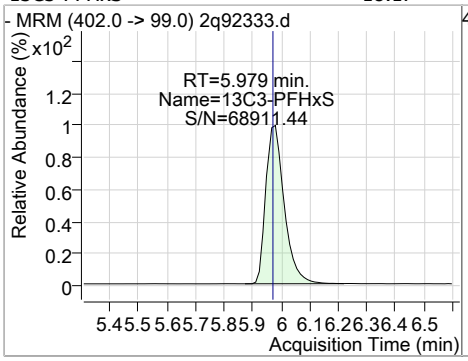


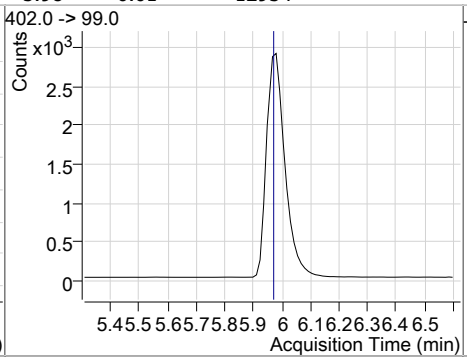


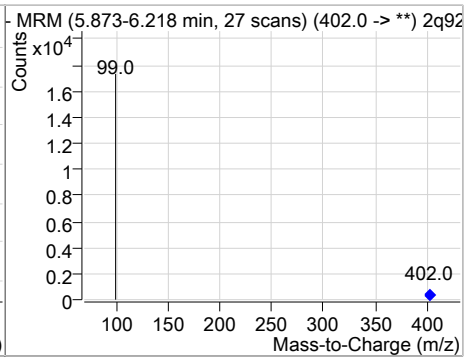


Perfluorinated Compounds by LC/MS/MS

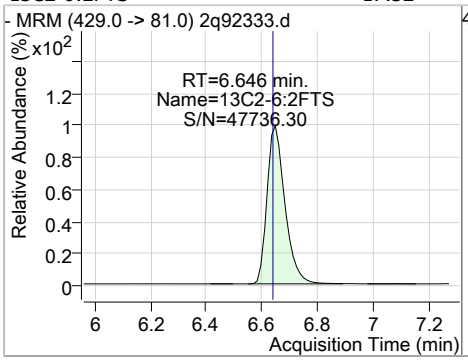
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.17	5.98	0.01	12954				

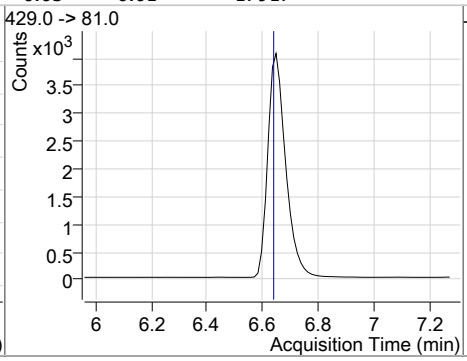


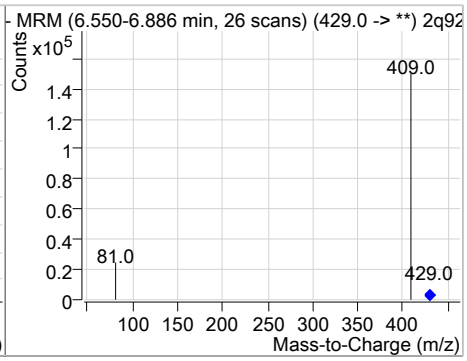




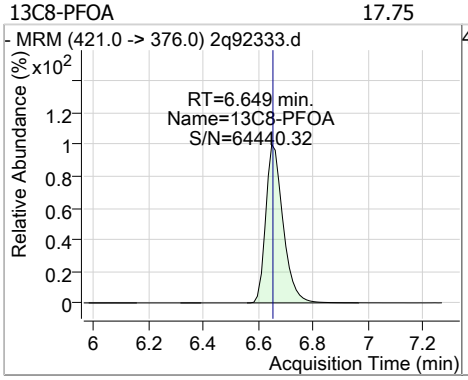
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.32	6.65	0.01	17917				

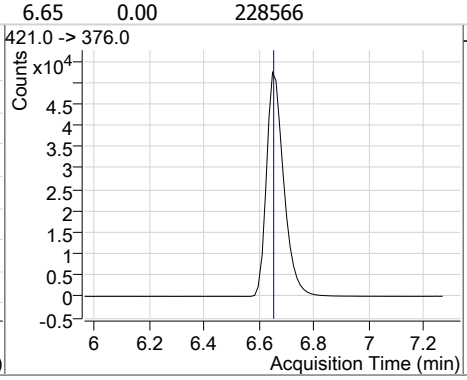


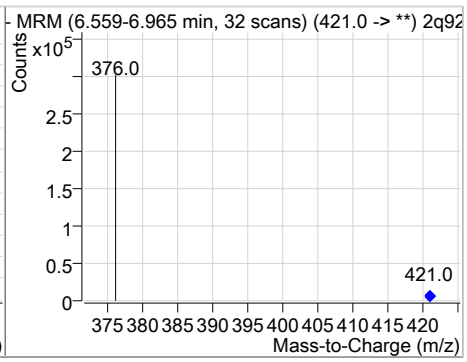




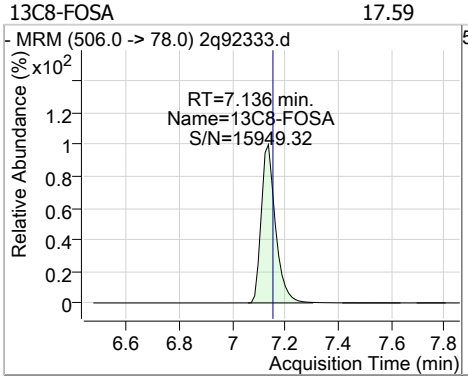
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.75	6.65	0.00	228566				

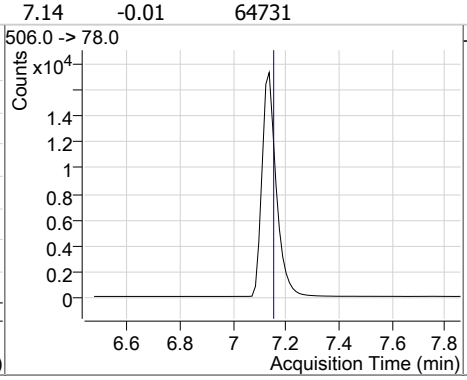


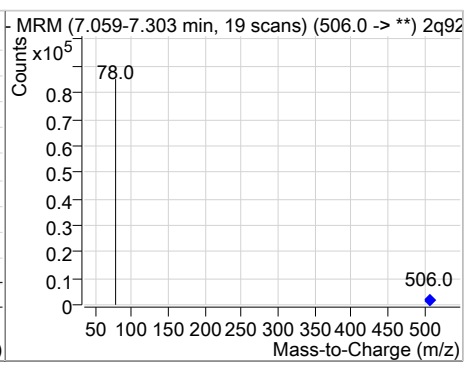




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.59	7.14	-0.01	64731				

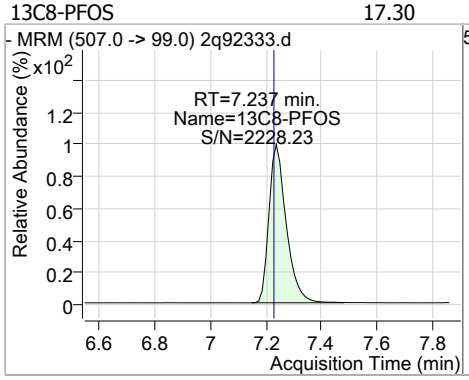


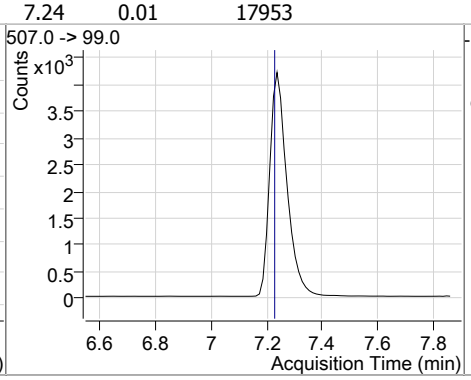


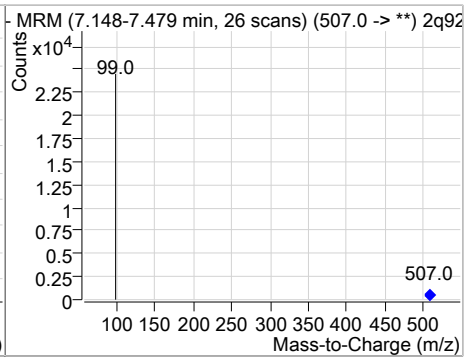


Perfluorinated Compounds by LC/MS/MS

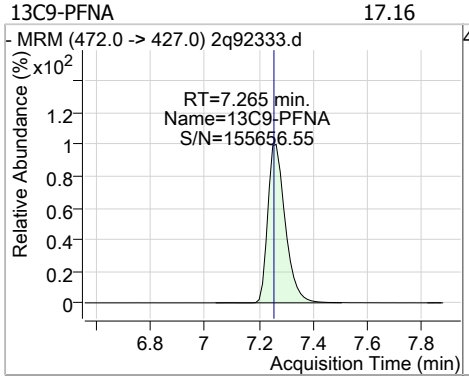
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.30	7.24	0.01	17953				

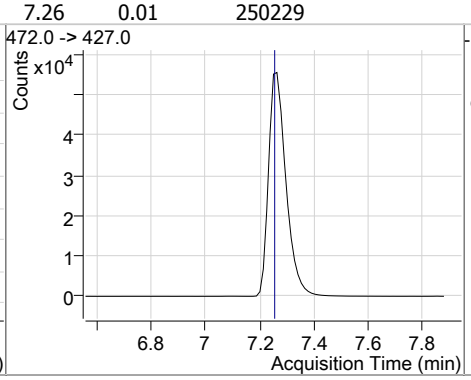


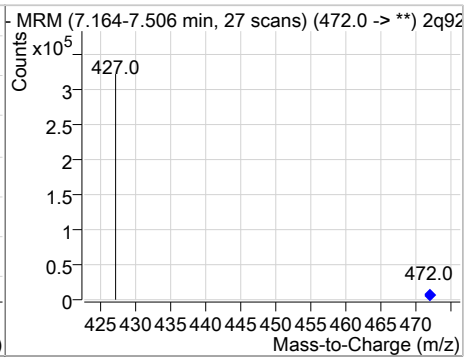




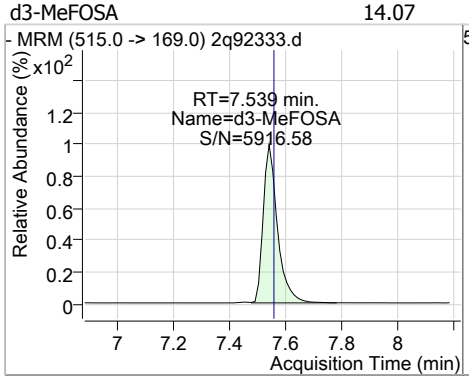
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.16	7.26	0.01	250229				

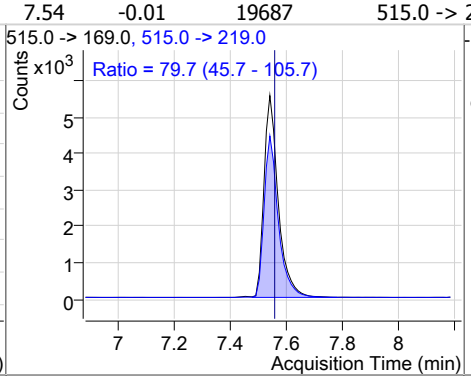


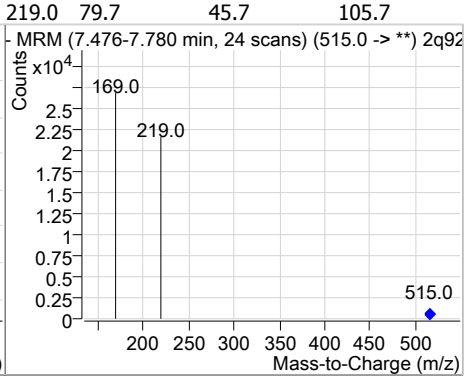




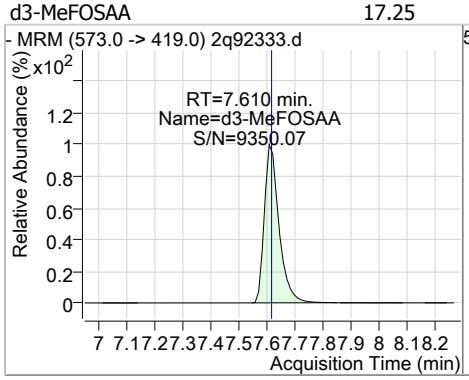
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	14.07	7.54	-0.01	19687	515.0 -> 219.0	79.7	45.7	105.7

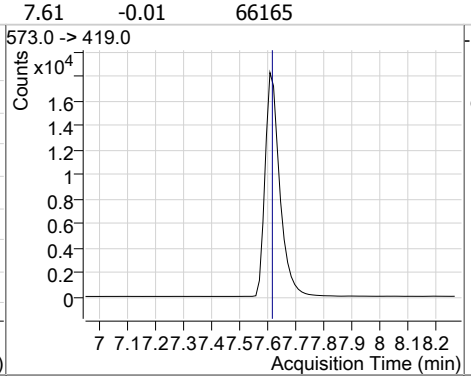


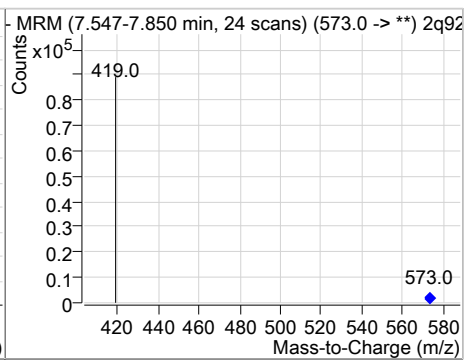




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.25	7.61	-0.01	66165				

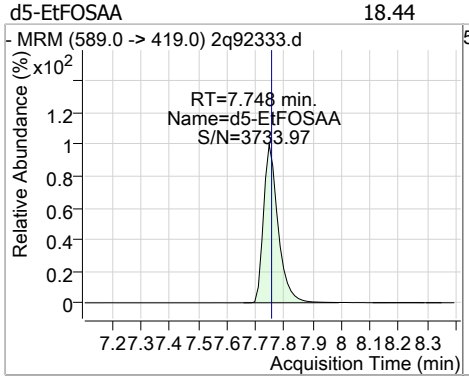


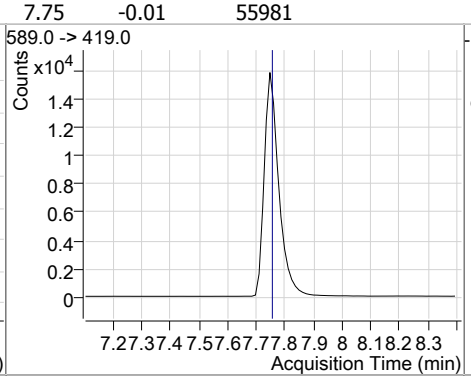


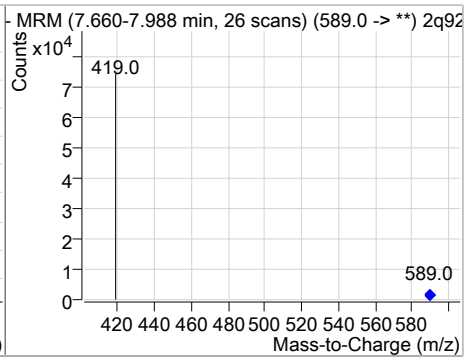


Perfluorinated Compounds by LC/MS/MS

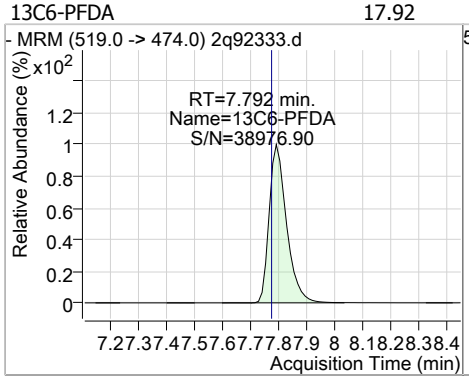
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.44	7.75	-0.01	55981				

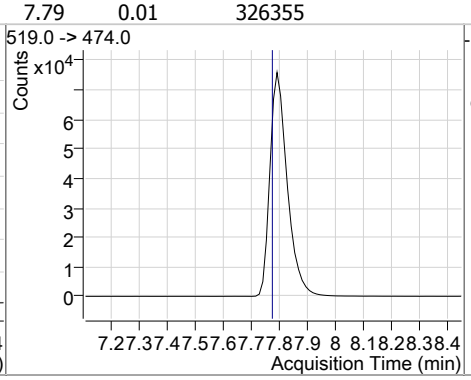


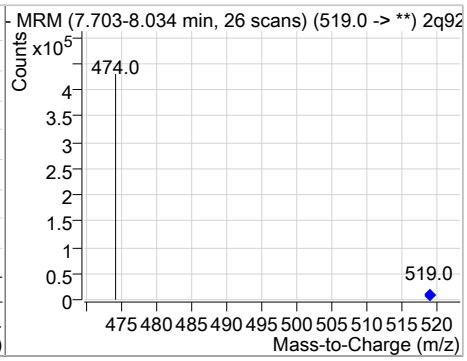




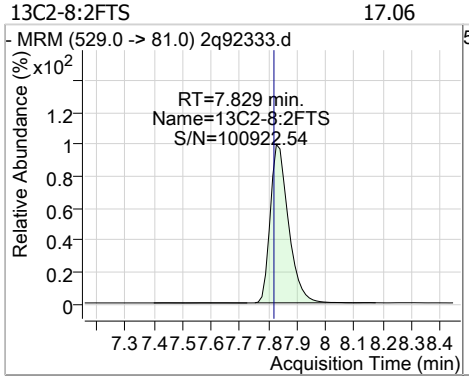
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.92	7.79	0.01	326355				

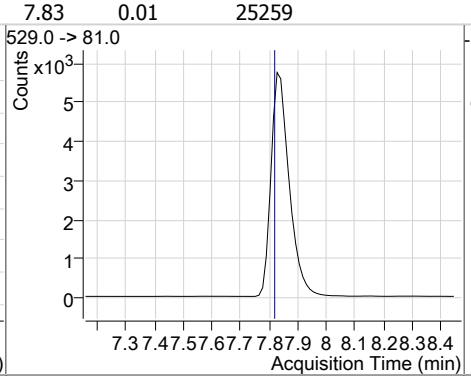


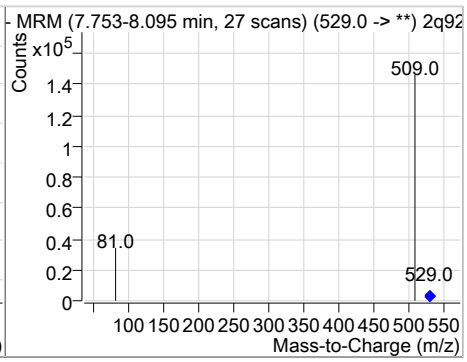




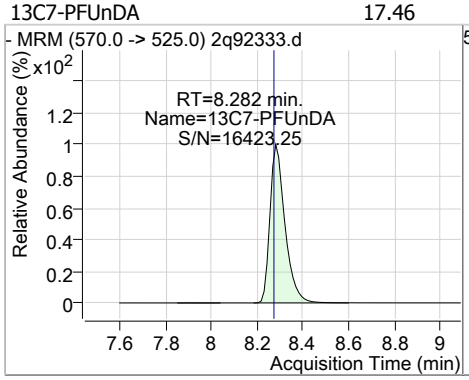
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.06	7.83	0.01	25259				

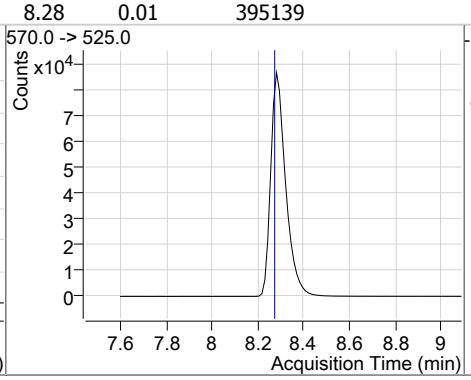


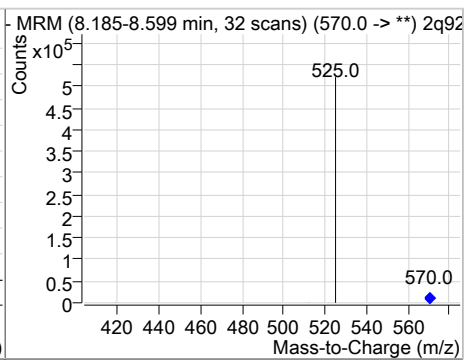




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.46	8.28	0.01	395139				

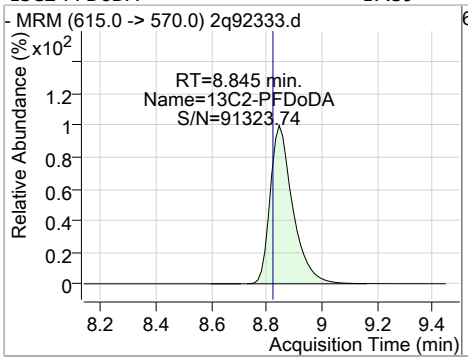


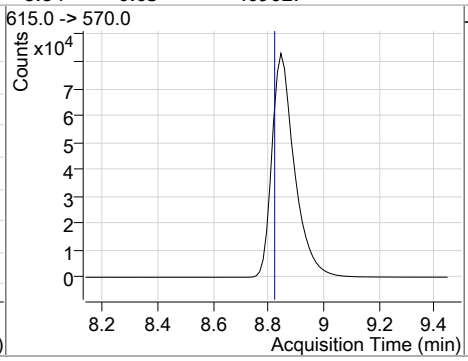


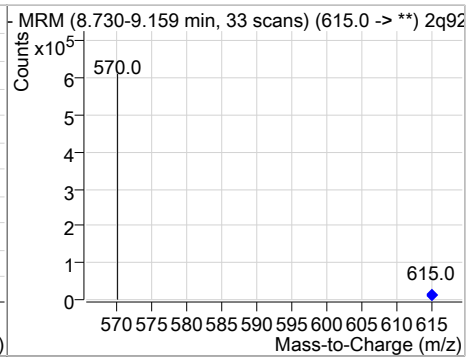


Perfluorinated Compounds by LC/MS/MS

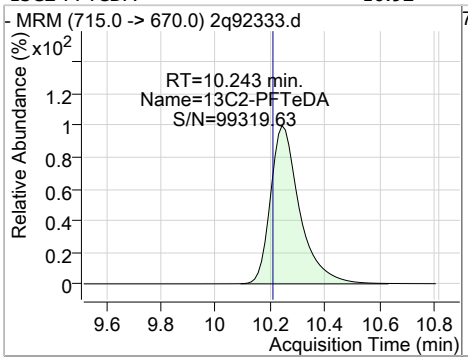
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.39	8.84	0.03	469627				

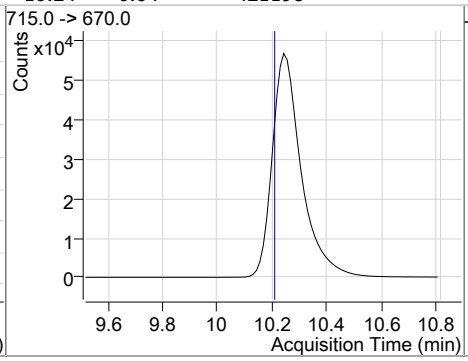


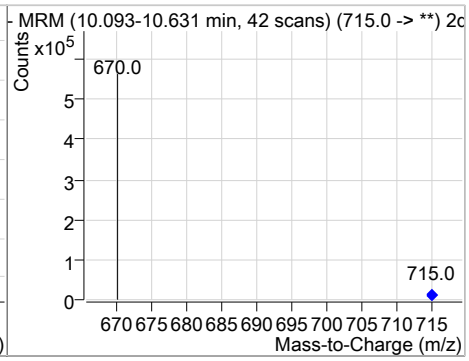




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	16.92	10.24	0.04	421198				







Perfluorinated Compounds by LC/MS/MS

Data File : 2q92309.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 4:09:02 PM
Sample Name : op91428-MB
Vial : P6-A2
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

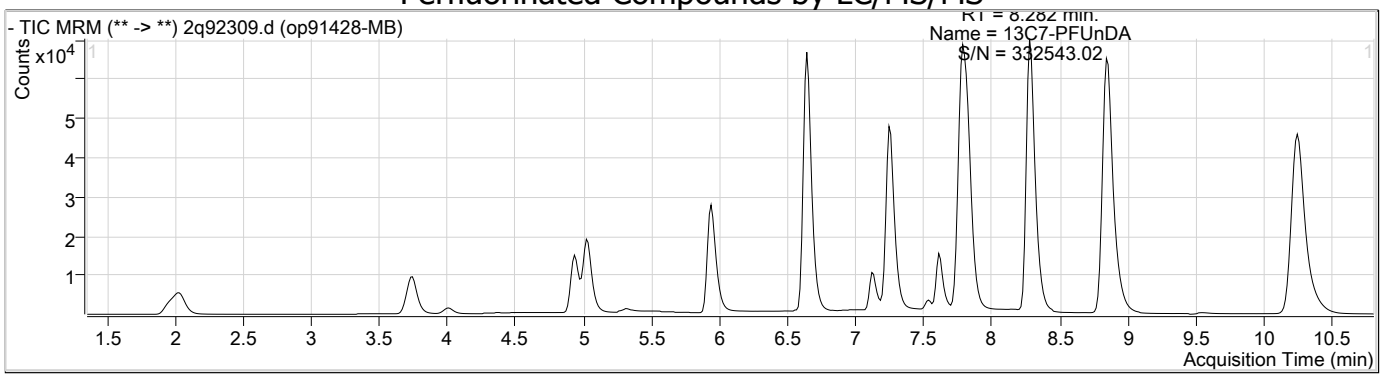
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	38341	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	45142	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	52070	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	79337	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	115332	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	166956	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	190736	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	247820	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	317476	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	372389	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	336343	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	33547	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	7524	20.00	µg/L	0.000
M3-PFHxS	5.979	402.0 -> 99.0	10940	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	15688	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	6929	20.00	µg/L	0.000
M2-6:2FTS	6.646	429.0 -> 81.0	15978	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	21753	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	48494	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	3035	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	4969	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	6929	14.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.5%		
13C2-6:2FTS	6.646	429.0 -> 81.0	15978	15.45	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.2%		
13C2-8:2FTS	7.828	529.0 -> 81.0	21753	14.69	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.5%		
13C2-PFDoDA	8.845	615.0 -> 570.0	372389	13.79	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.9%		
13C2-PFTeDA	10.243	715.0 -> 670.0	336343	13.51	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.6%		
13C3-PFBS	4.004	302.0 -> 99.0	7524	14.79	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%		
13C3-PFHxS	5.979	402.0 -> 99.0	10940	15.35	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.7%		
13C4-PFBA	2.027	217.0 -> 172.0	45142	11.68	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.4%		
13C4-PFHpA	5.941	367.0 -> 322.0	115332	12.42	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.1%		
d5-EtFOSAA	7.748	589.0 -> 419.0	38341	12.63	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.2%		
13C5-PFHxA	5.027	318.0 -> 273.0	79337	11.75	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.7%		
13C5-PFPeA	3.749	268.0 -> 223.0	52070	11.42	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

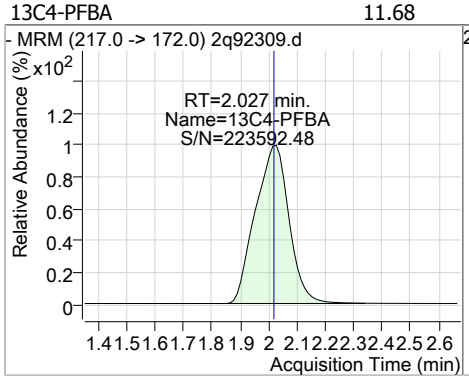
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 57.1%	
13C6-PFDA	7.792	519.0 -> 474.0	247820	13.61 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.0%	
13C7-PFUnDA	8.282	570.0 -> 525.0	317476	14.03 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.1%	
13C8-FOSA	7.124	506.0 -> 78.0	33547	9.12 µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.6%	
13C8-PFOA	6.649	421.0 -> 376.0	166956	12.97 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.8%	
13C8-PFOS	7.237	507.0 -> 99.0	15688	15.12 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.6%	
13C9-PFNA	7.252	472.0 -> 427.0	190736	13.08 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.4%	
d3-MeFOSAA	7.610	573.0 -> 419.0	48494	12.65 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.2%	
13C3-HFPO-DA	5.319	287.0 -> 169.0	3035	11.65 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.3%	
d3-MeFOSA	7.539	515.0 -> 169.0	4969	3.55 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.8%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	
MeFOSA	-	512.0 -> 219.0	-	N.D.	

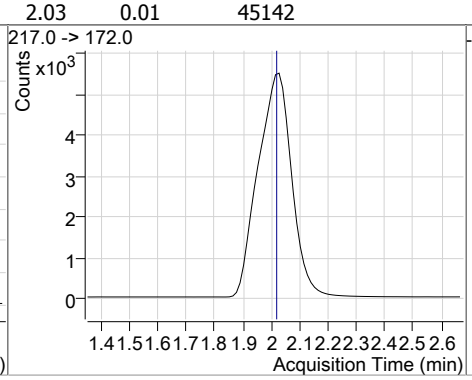
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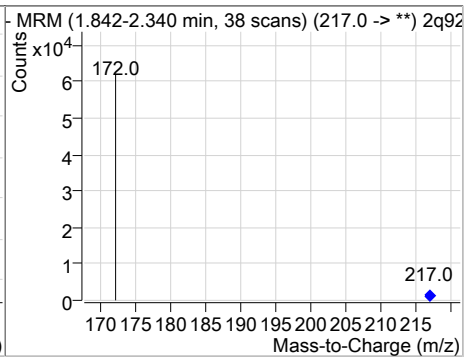
Perfluorinated Compounds by LC/MS/MS



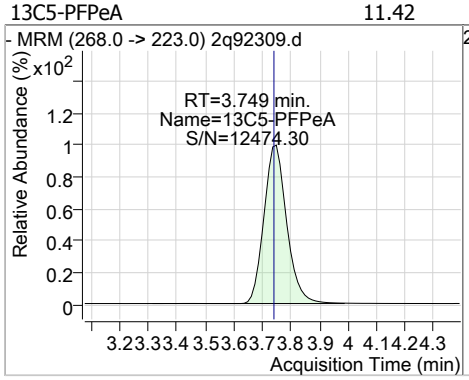
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	11.68	2.03	0.01	45142				

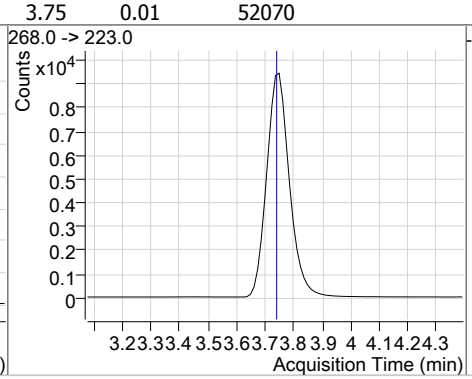


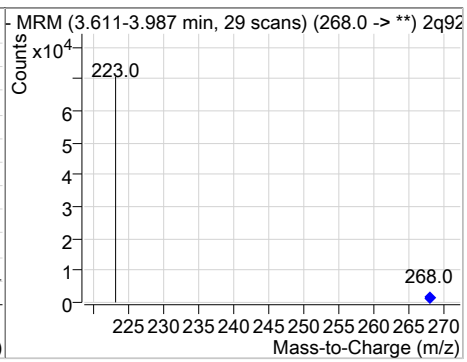




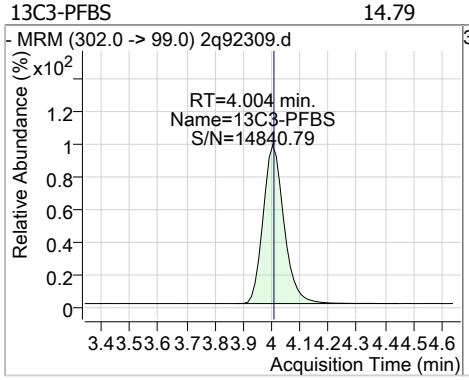
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	11.42	3.75	0.01	52070				

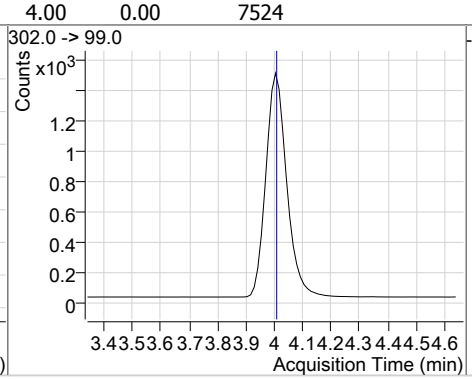


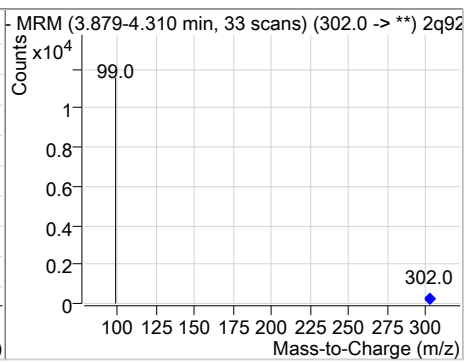




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.79	4.00	0.00	7524				

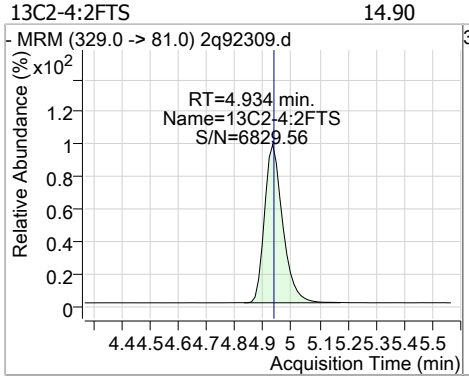


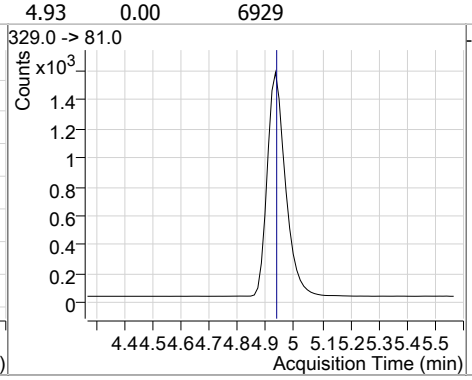


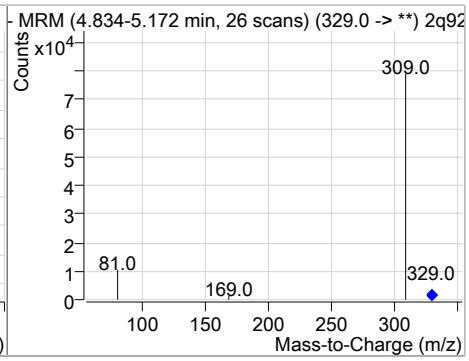


Perfluorinated Compounds by LC/MS/MS

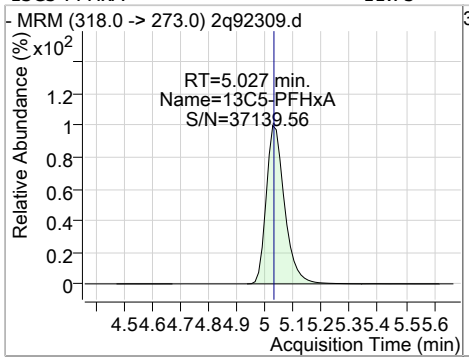
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.90	4.93	0.00	6929				

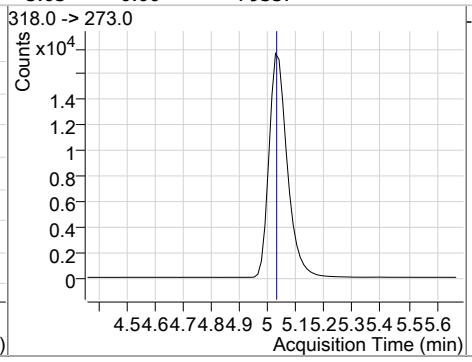


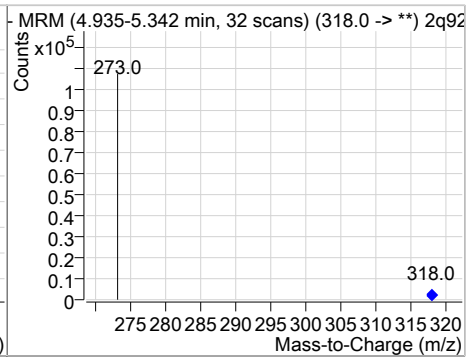




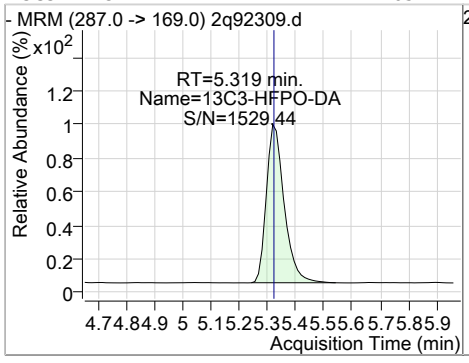
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	11.75	5.03	0.00	79337				

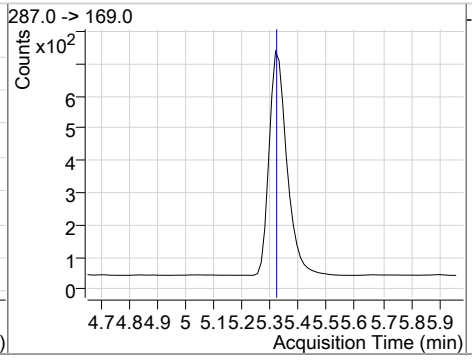


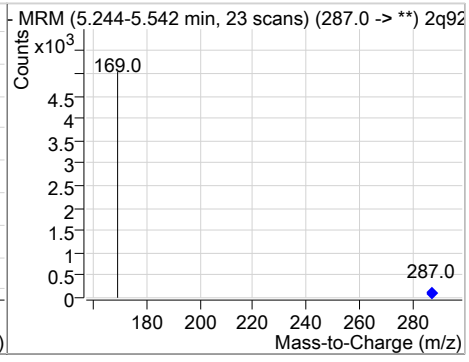




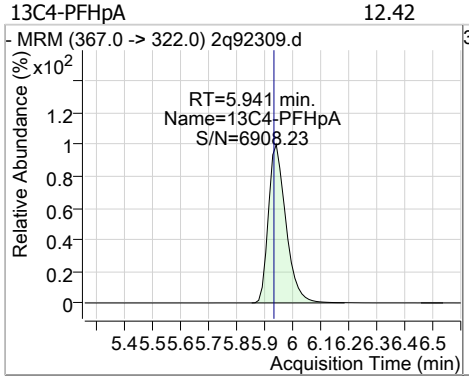
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13C3-HFPO-DA	11.65	5.32	0.00	3035				

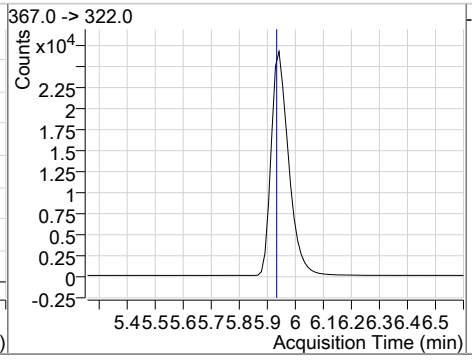


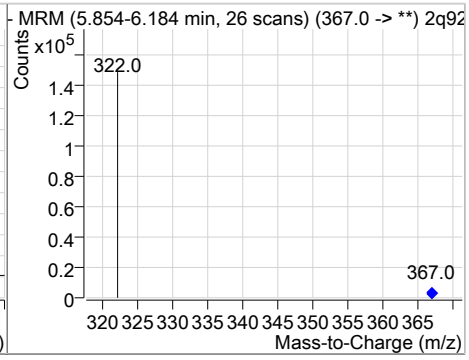




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	12.42	5.94	0.01	115332				

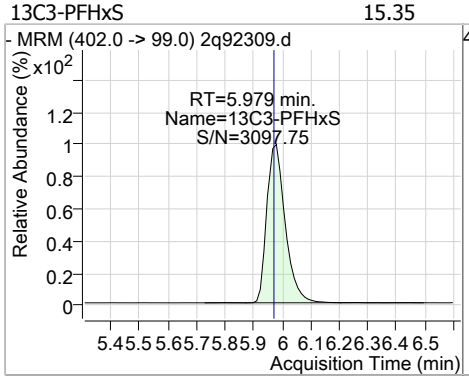


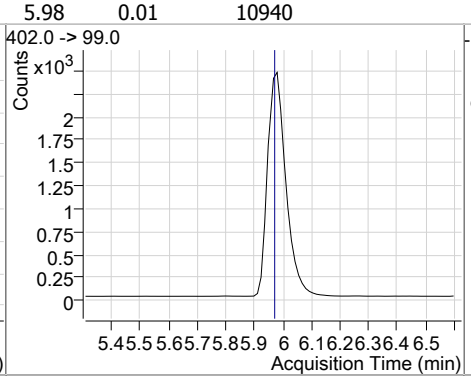


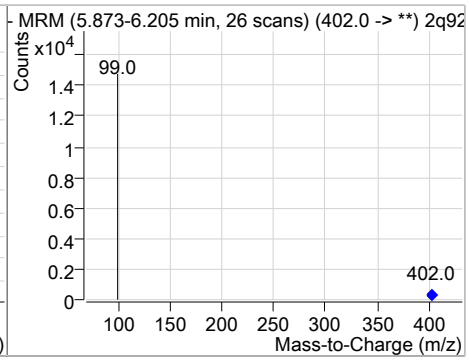


Perfluorinated Compounds by LC/MS/MS

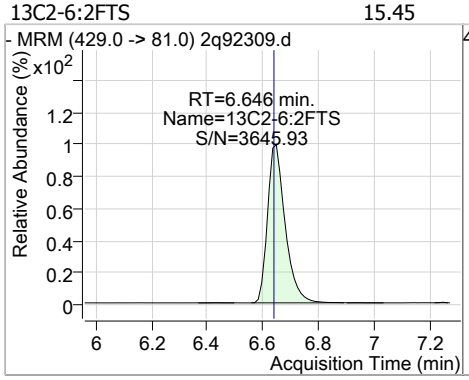
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.35	5.98	0.01	10940				

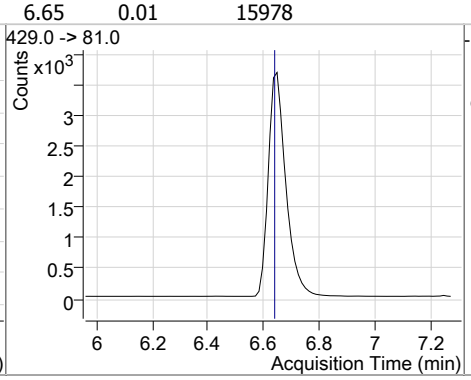


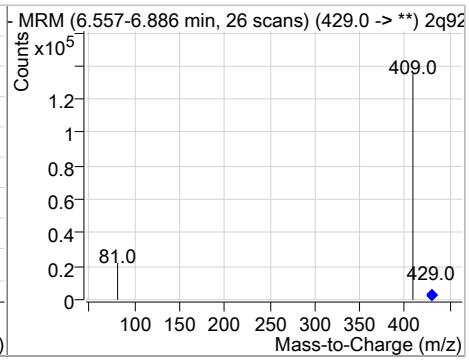




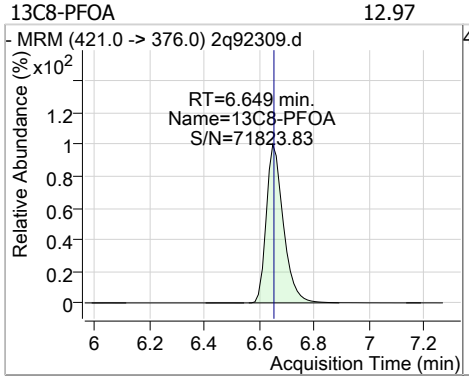
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.45	6.65	0.01	15978				

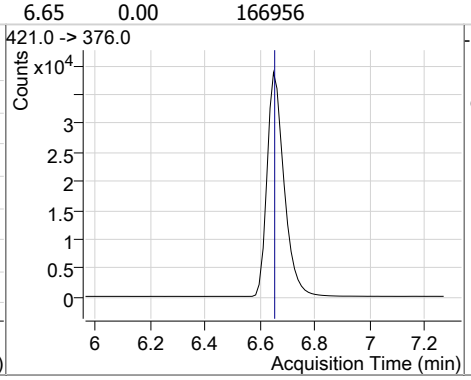


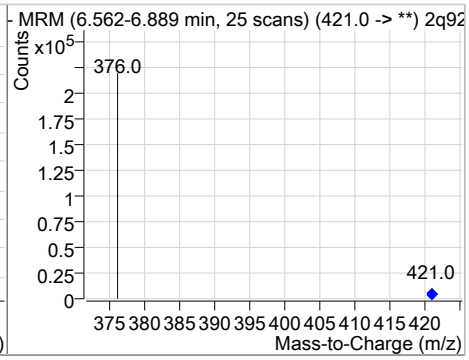




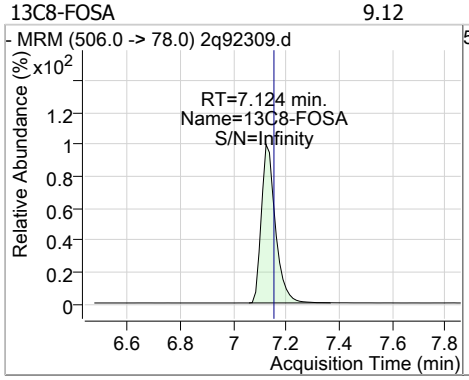
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	12.97	6.65	0.00	166956				

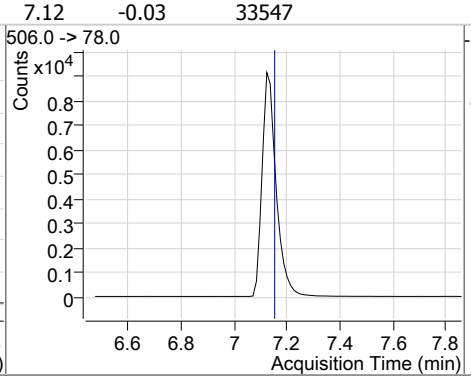


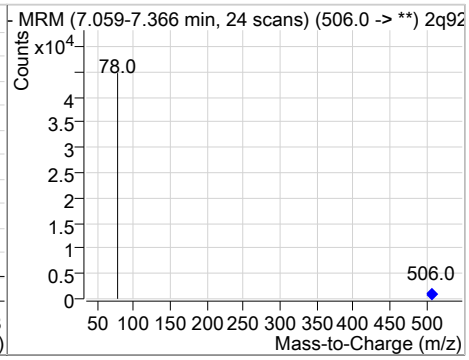




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	9.12	7.12	-0.03	33547				

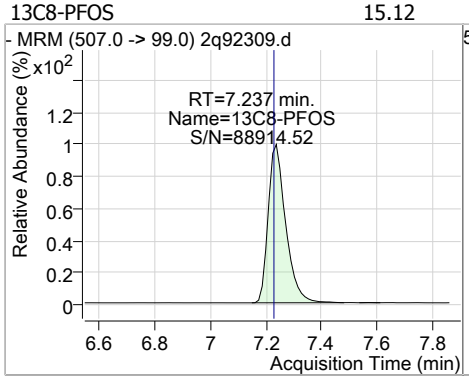


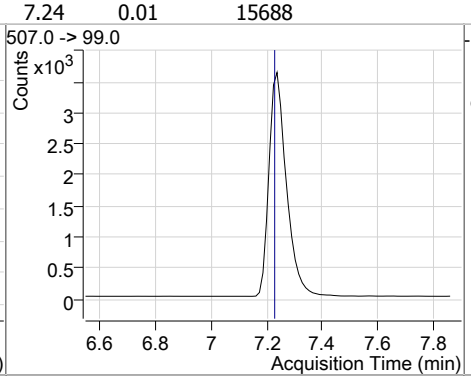


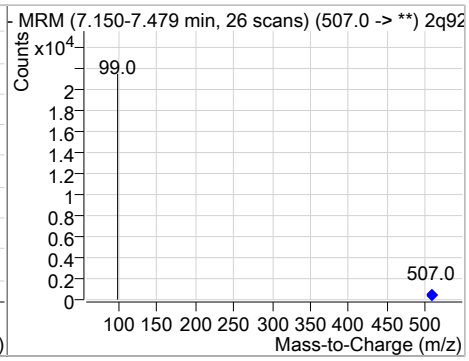


Perfluorinated Compounds by LC/MS/MS

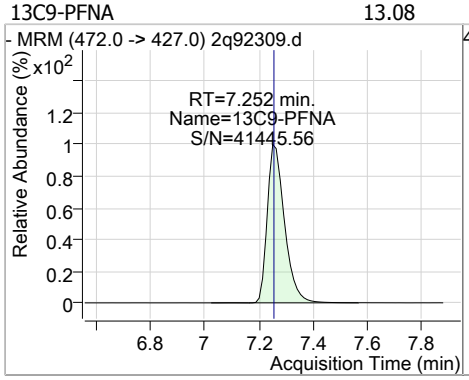
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.12	7.24	0.01	15688				

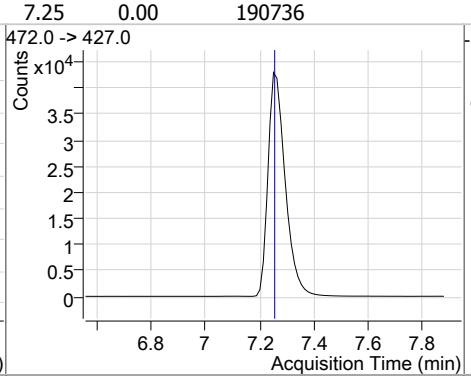


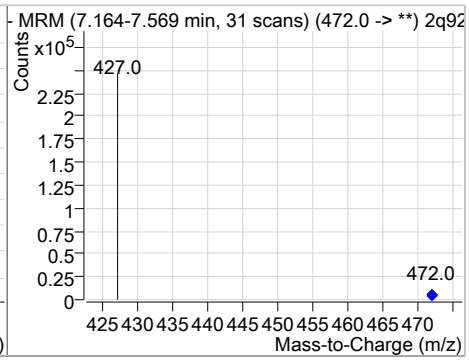




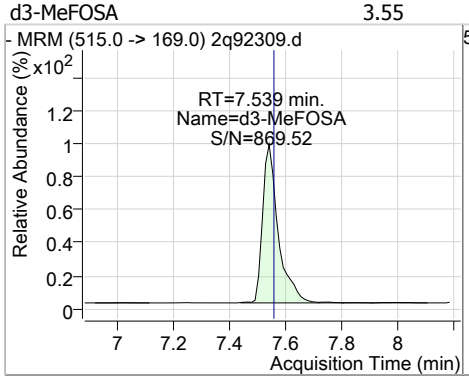
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	13.08	7.25	0.00	190736				

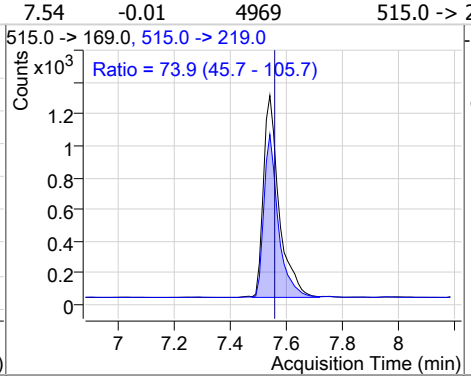


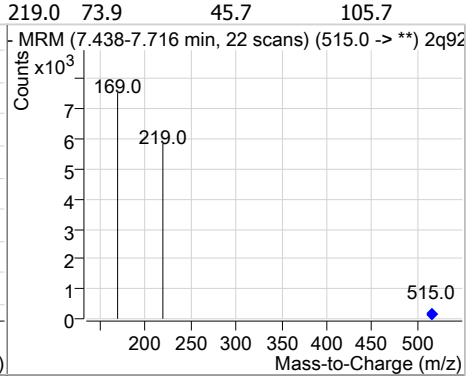




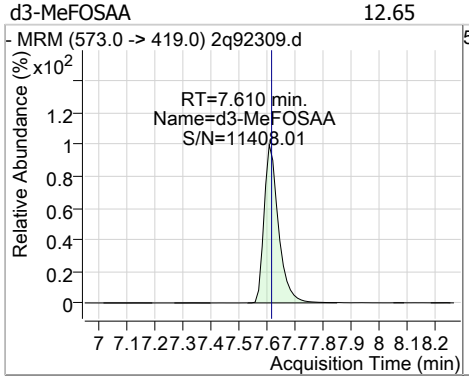
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	3.55	7.54	-0.01	4969	515.0 -> 219.0	73.9	45.7	105.7

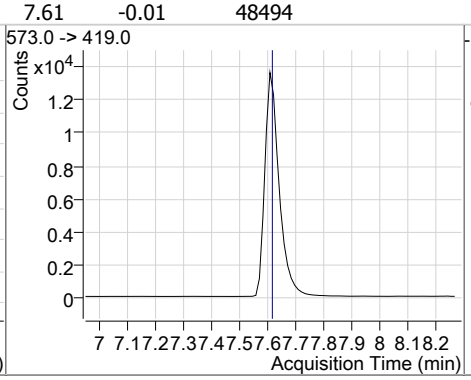


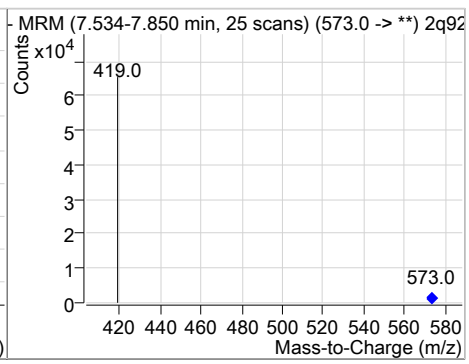




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	12.65	7.61	-0.01	48494				

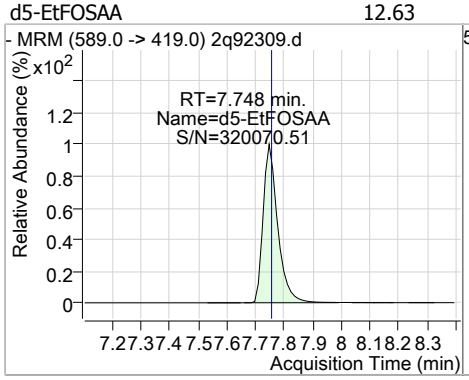


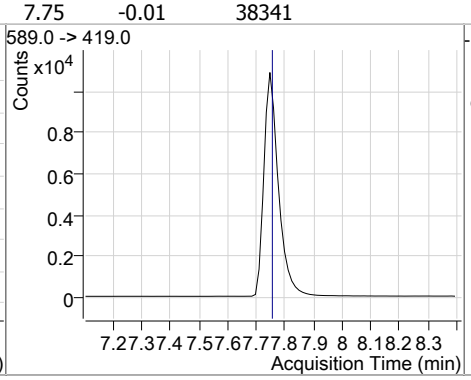


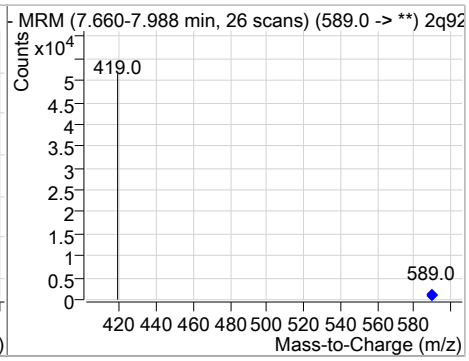


Perfluorinated Compounds by LC/MS/MS

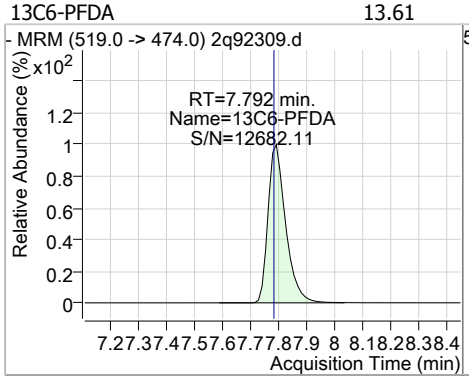
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	12.63	7.75	-0.01	38341				

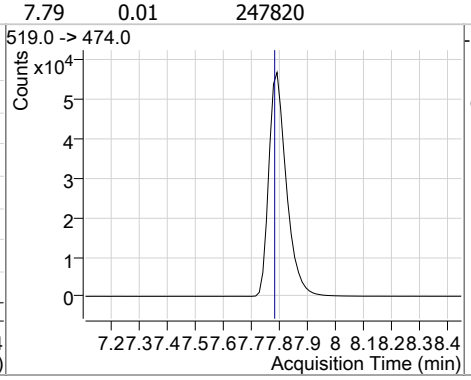


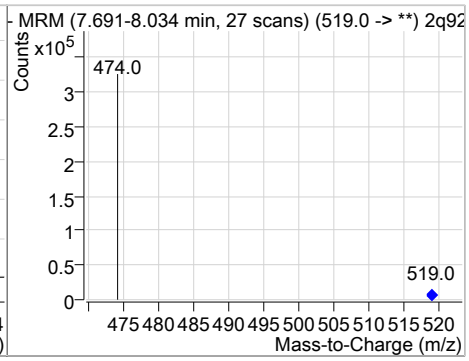




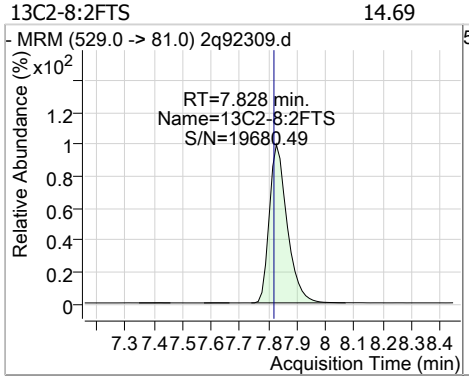
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	13.61	7.79	0.01	247820				

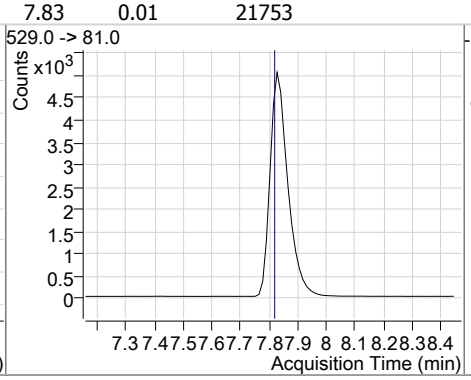


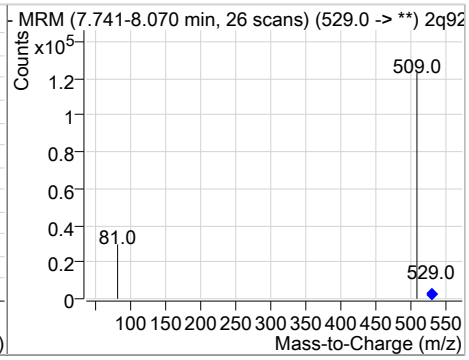




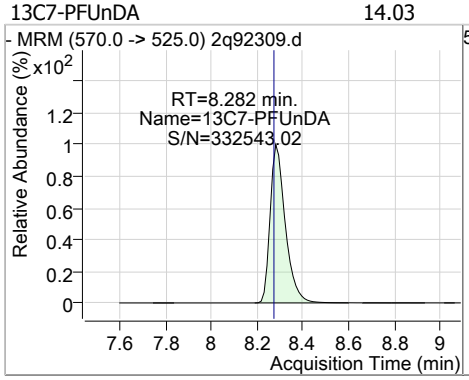
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.69	7.83	0.01	21753				

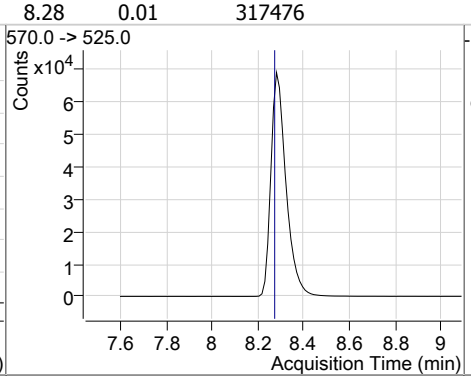


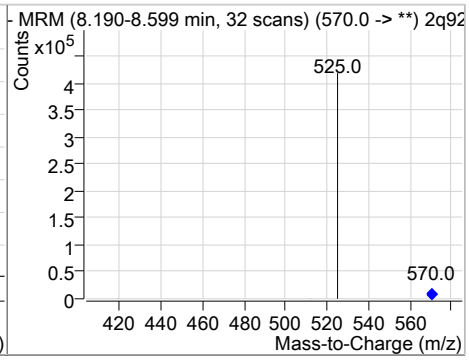




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.03	8.28	0.01	317476				

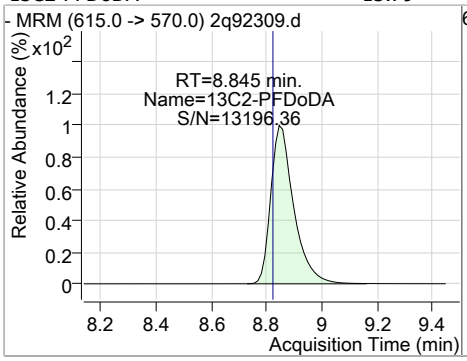


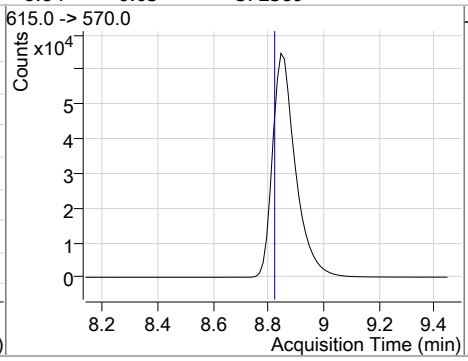


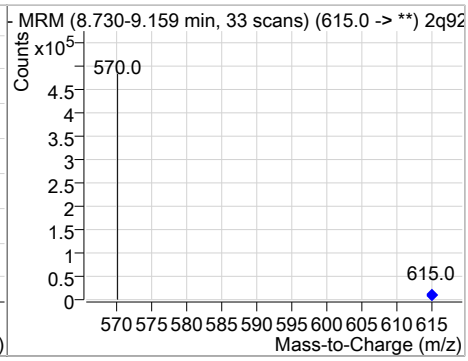


Perfluorinated Compounds by LC/MS/MS

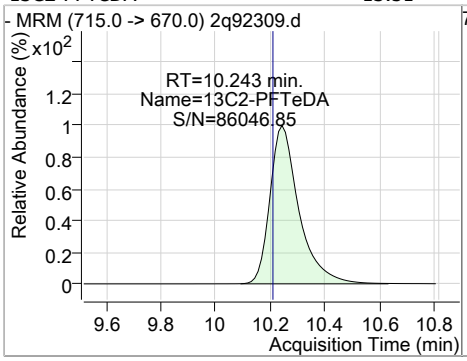
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.79	8.84	0.03	372389				

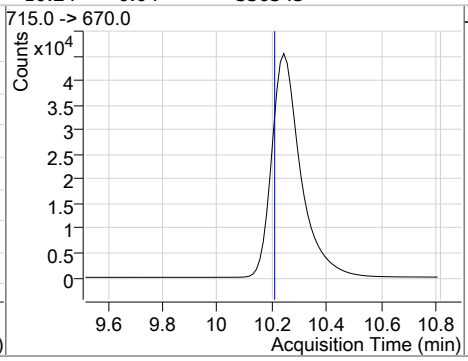


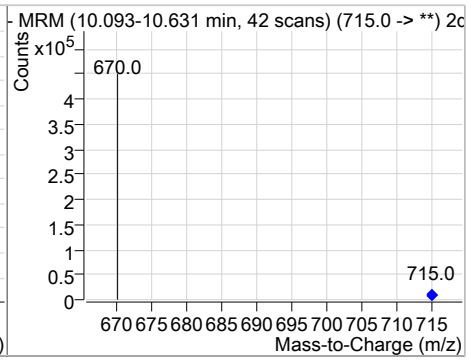




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	13.51	10.24	0.04	336343				







Perfluorinated Compounds by LC/MS/MS

Data File : 2q92305.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 11:36:35 AM
Sample Name : iblk
Vial : P1-A1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

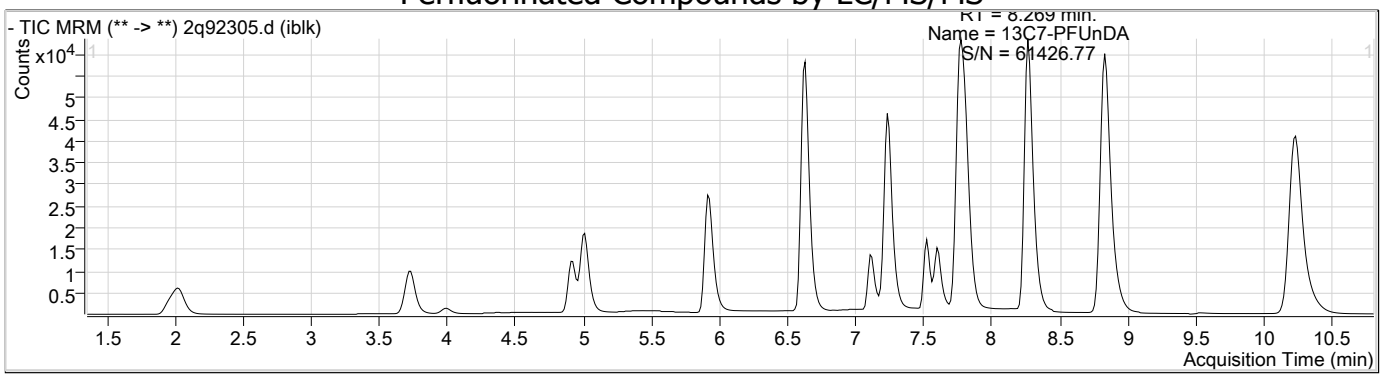
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	37592	20.00	µg/L	-0.025
M4-PFBA	2.014	217.0 -> 172.0	47494	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	53528	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	78878	20.00	µg/L	-0.013
M4-PFHpA	5.916	367.0 -> 322.0	114919	20.00	µg/L	-0.013
M8-PFOA	6.636	421.0 -> 376.0	157593	20.00	µg/L	-0.013
M9-PFNA	7.239	472.0 -> 427.0	180919	20.00	µg/L	-0.013
M6-PFDA	7.779	519.0 -> 474.0	230957	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	286176	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	339867	20.00	µg/L	0.014
M2-PFTeDA	10.230	715.0 -> 670.0	301047	20.00	µg/L	0.025
M8-FOSA	7.111	506.0 -> 78.0	45937	20.00	µg/L	-0.038
M3-PFBS	3.992	302.0 -> 99.0	6338	20.00	µg/L	-0.013
M3-PFHxS	5.948	402.0 -> 99.0	8848	20.00	µg/L	-0.019
M8-PFOS	7.212	507.0 -> 99.0	12997	20.00	µg/L	-0.013
M2-4:2FTS	4.909	329.0 -> 81.0	5746	20.00	µg/L	-0.025
M2-6:2FTS	6.621	429.0 -> 81.0	12812	20.00	µg/L	-0.013
M2-8:2FTS	7.816	529.0 -> 81.0	17508	20.00	µg/L	0.000
M3-MeFOSAA	7.598	573.0 -> 419.0	45826	20.00	µg/L	-0.025
M3-HFPO-DA	5.319	287.0 -> 169.0	14	20.00	µg/L	0.000
M3-MeFOSA	7.527	515.0 -> 169.0	31200	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	5746	12.35	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.8%		
13C2-6:2FTS	6.621	429.0 -> 81.0	12812	12.39	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.9%		
13C2-8:2FTS	7.816	529.0 -> 81.0	17508	11.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.1%		
13C2-PFDoDA	8.832	615.0 -> 570.0	339867	12.58	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.9%		
13C2-PFTeDA	10.230	715.0 -> 670.0	301047	12.09	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.5%		
13C3-PFBS	3.992	302.0 -> 99.0	6338	12.46	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.3%		
13C3-PFHxS	5.948	402.0 -> 99.0	8848	12.41	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.1%		
13C4-PFBA	2.014	217.0 -> 172.0	47494	12.29	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.5%		
13C4-PFHpA	5.916	367.0 -> 322.0	114919	12.38	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.9%		
d5-EtFOSAA	7.735	589.0 -> 419.0	37592	12.38	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.9%		
13C5-PFHxA	5.014	318.0 -> 273.0	78878	11.68	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.4%		
13C5-PFPeA	3.724	268.0 -> 223.0	53528	11.74	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

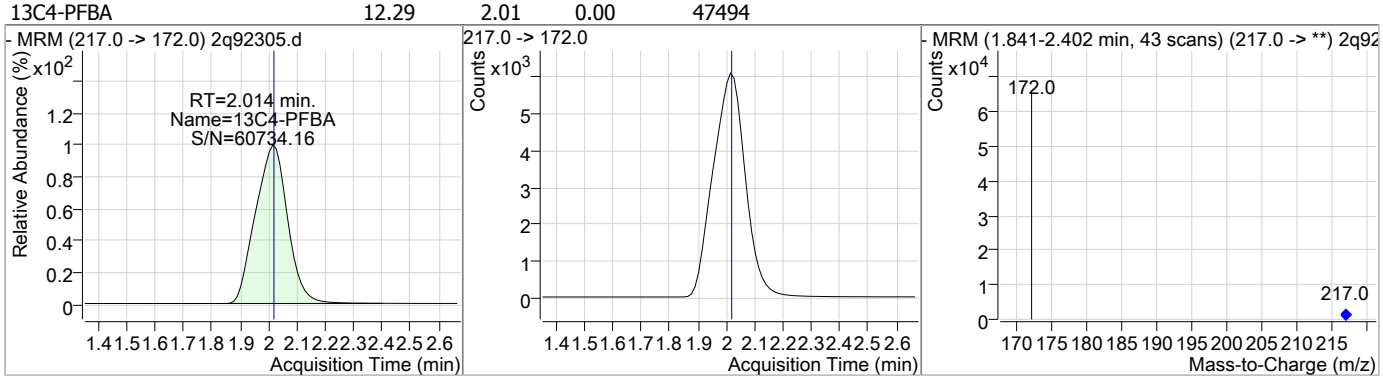
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.7%	
13C6-PFDA	7.779	519.0 -> 474.0	230957	12.68 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.4%	
13C7-PFUnDA	8.269	570.0 -> 525.0	286176	12.65 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.2%	
13C8-FOSA	7.111	506.0 -> 78.0	45937	12.48 µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.4%	
13C8-PFOA	6.636	421.0 -> 376.0	157593	12.24 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.2%	
13C8-PFOS	7.212	507.0 -> 99.0	12997	12.52 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.6%	
13C9-PFNA	7.239	472.0 -> 427.0	180919	12.40 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.0%	
d3-MeFOSAA	7.598	573.0 -> 419.0	45826	11.95 µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.7%	
13C3-HFPO-DA	5.319	287.0 -> 169.0	14	0.05 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 0.3%	
d3-MeFOSA	7.527	515.0 -> 169.0	31200	22.29 µg/L	-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.5%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	
MeFOSA	-	512.0 -> 219.0	-	N.D.	

= Qualifier out of range, m = manually integrated, + = Area summed

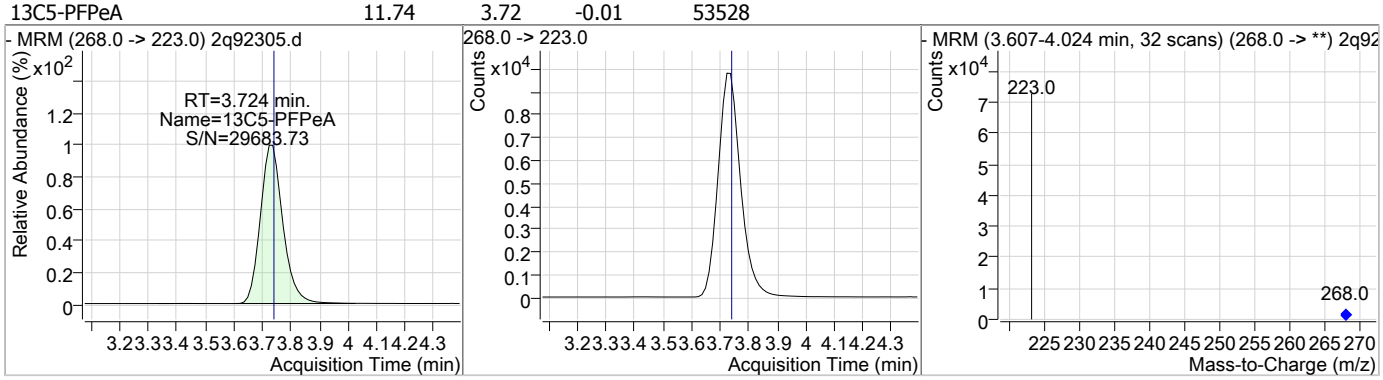
Perfluorinated Compounds by LC/MS/MS



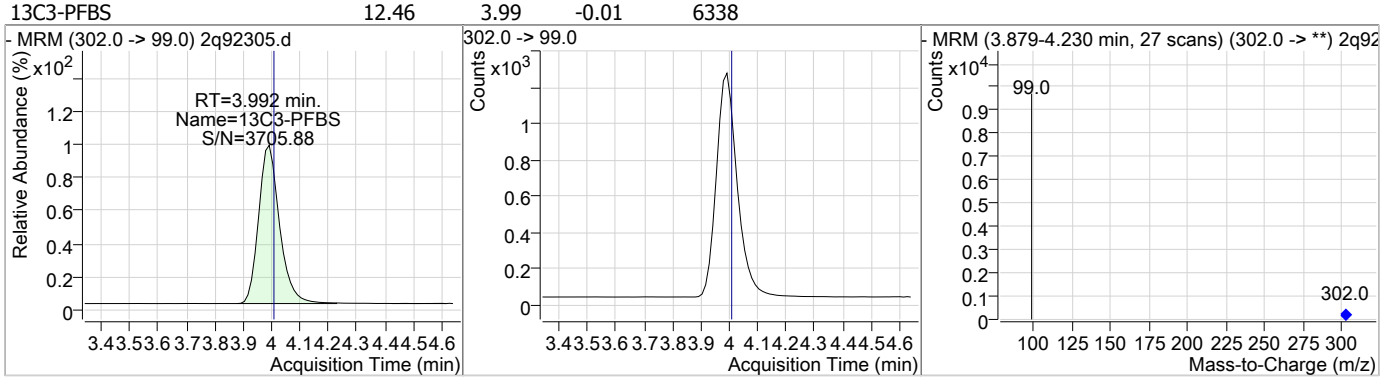
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	12.29	2.01	0.00	47494				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	11.74	3.72	-0.01	53528				

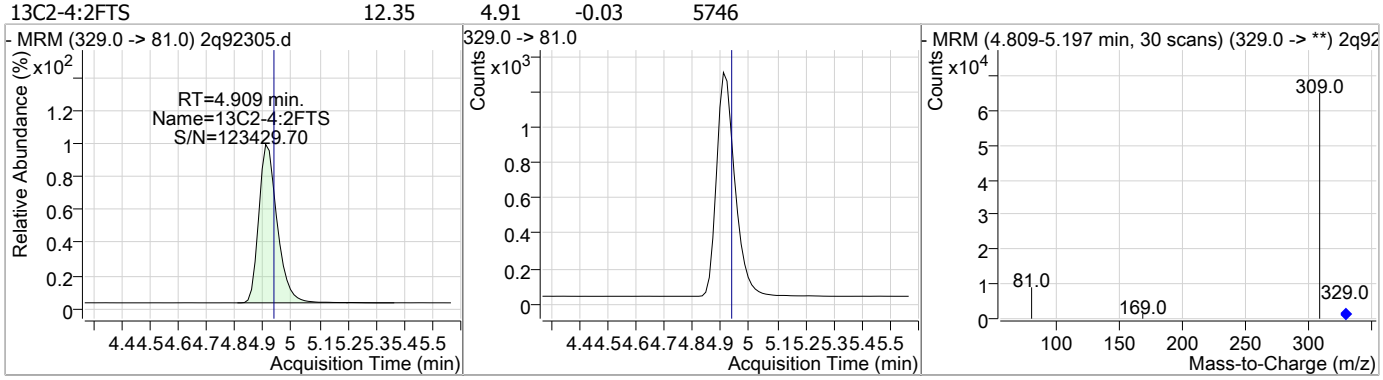


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	12.46	3.99	-0.01	6338				

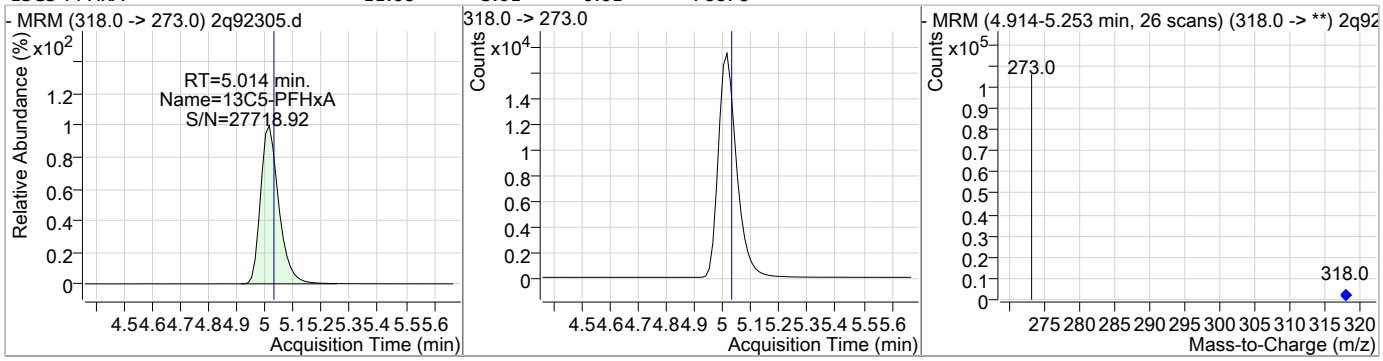


Perfluorinated Compounds by LC/MS/MS

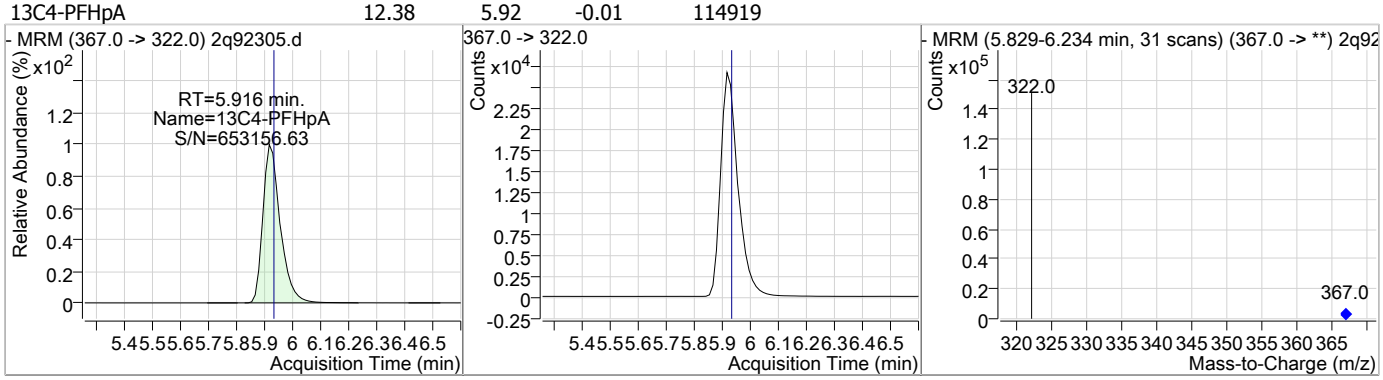
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	12.35	4.91	-0.03	5746				



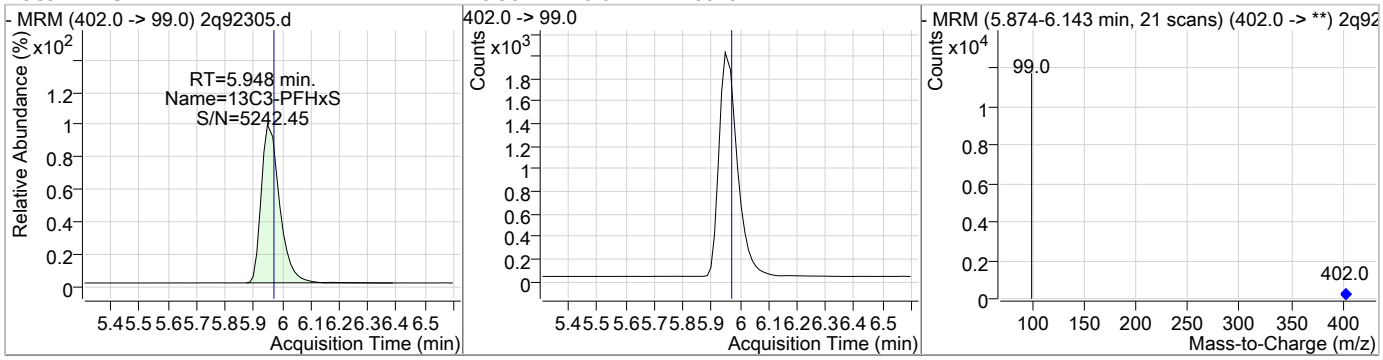
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	11.68	5.01	-0.01	78878				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	12.38	5.92	-0.01	114919				

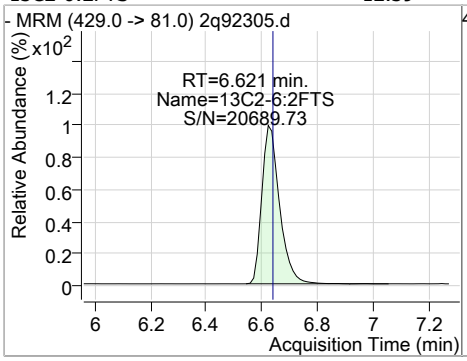


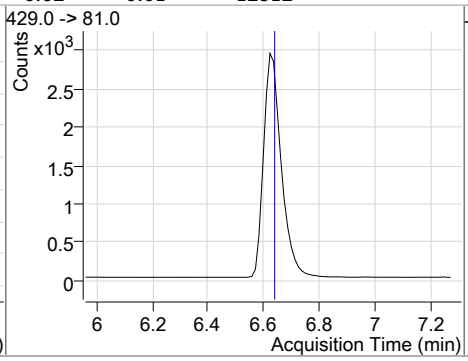
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	12.41	5.95	-0.02	8848				

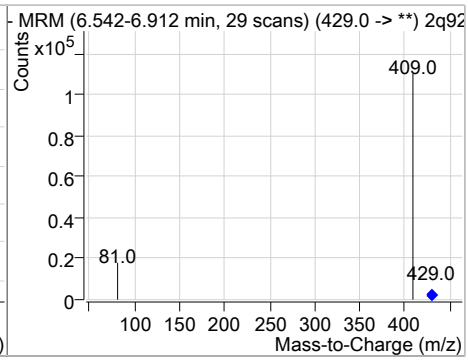


Perfluorinated Compounds by LC/MS/MS

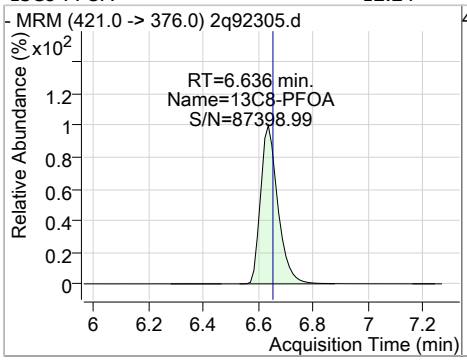
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	12.39	6.62	-0.01	12812				

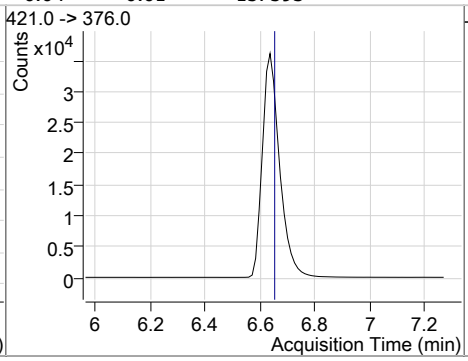


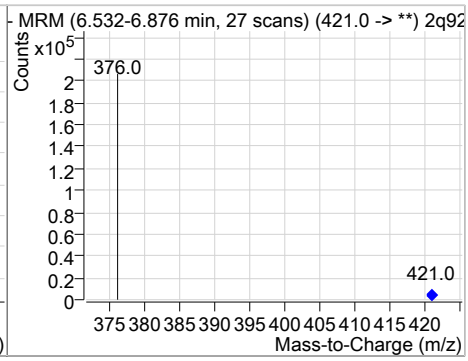




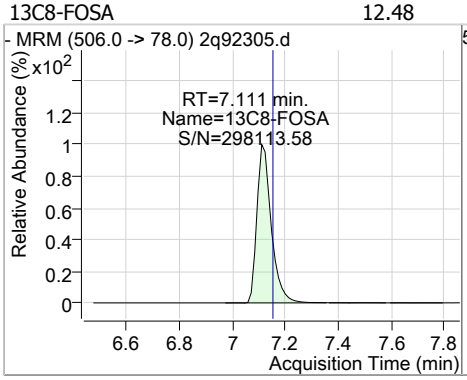
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	12.24	6.64	-0.01	157593				

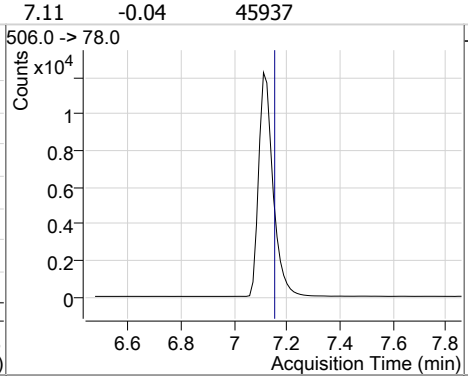


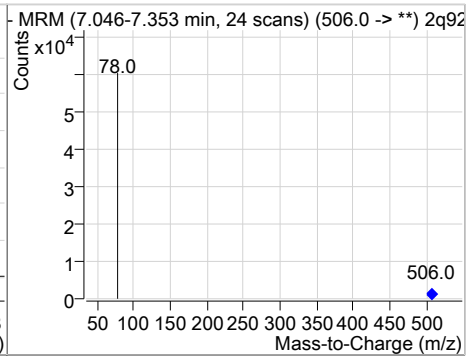




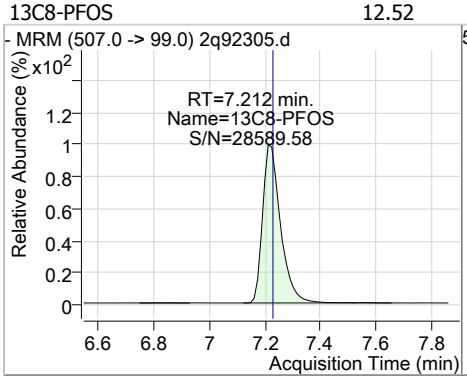
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.48	7.11	-0.04	45937				

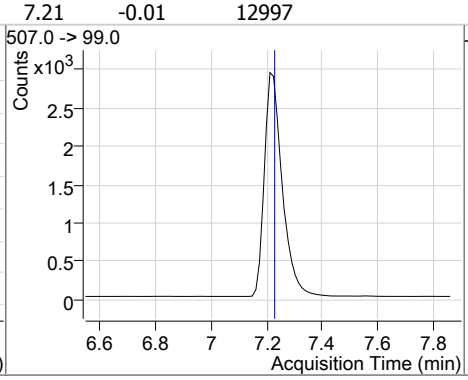


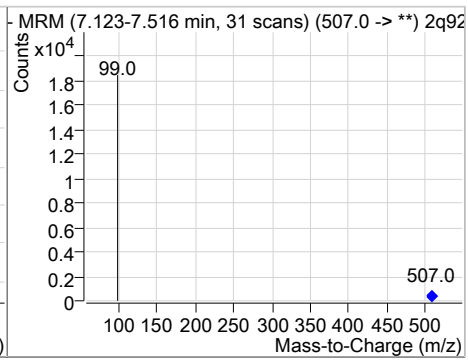




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.52	7.21	-0.01	12997				

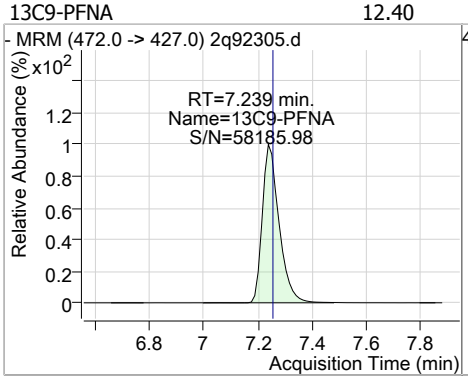


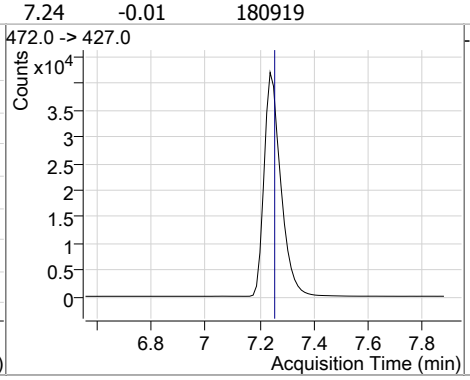


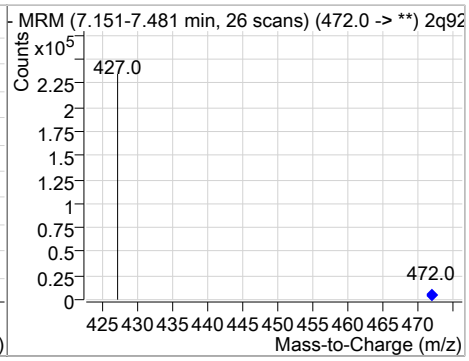


Perfluorinated Compounds by LC/MS/MS

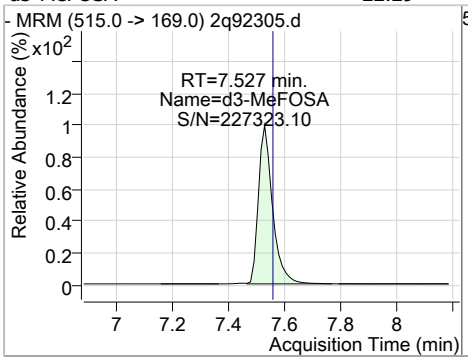
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	12.40	7.24	-0.01	180919				

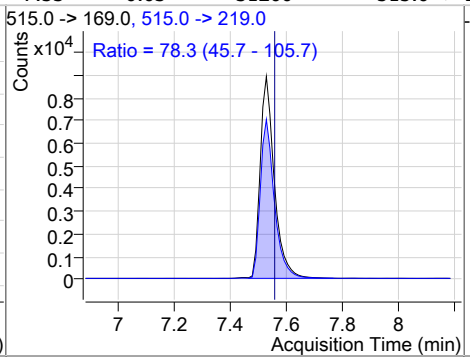


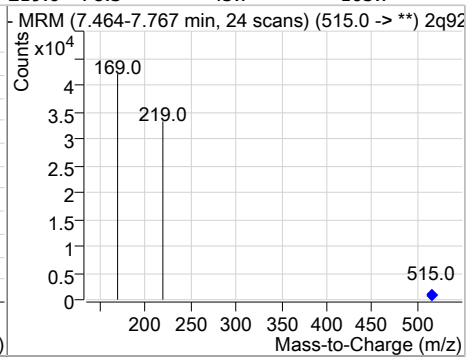




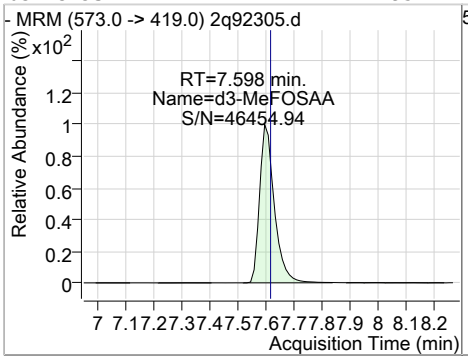
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	22.29	7.53	-0.03	31200	515.0 -> 219.0	78.3	45.7	105.7

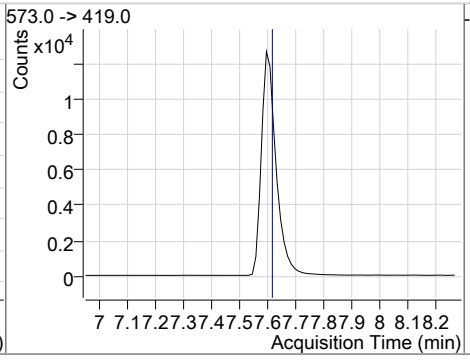


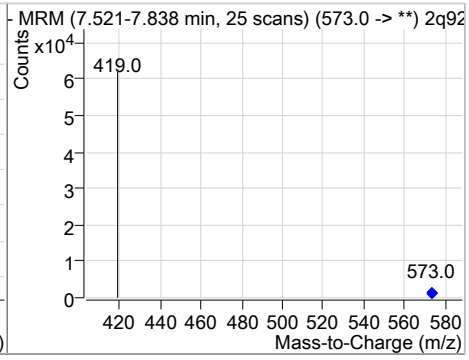




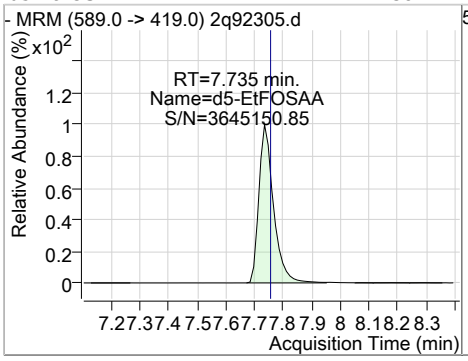
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	11.95	7.60	-0.03	45826				

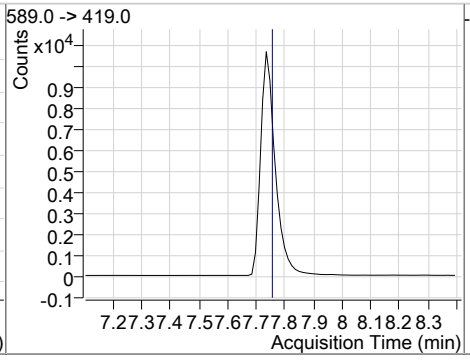


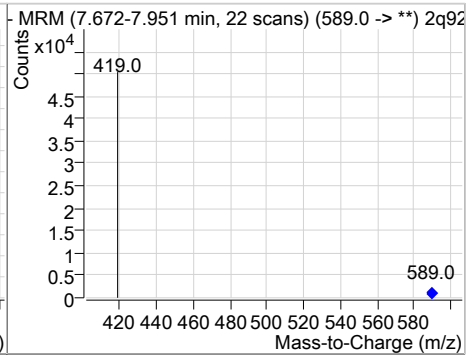




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	12.38	7.74	-0.03	37592				

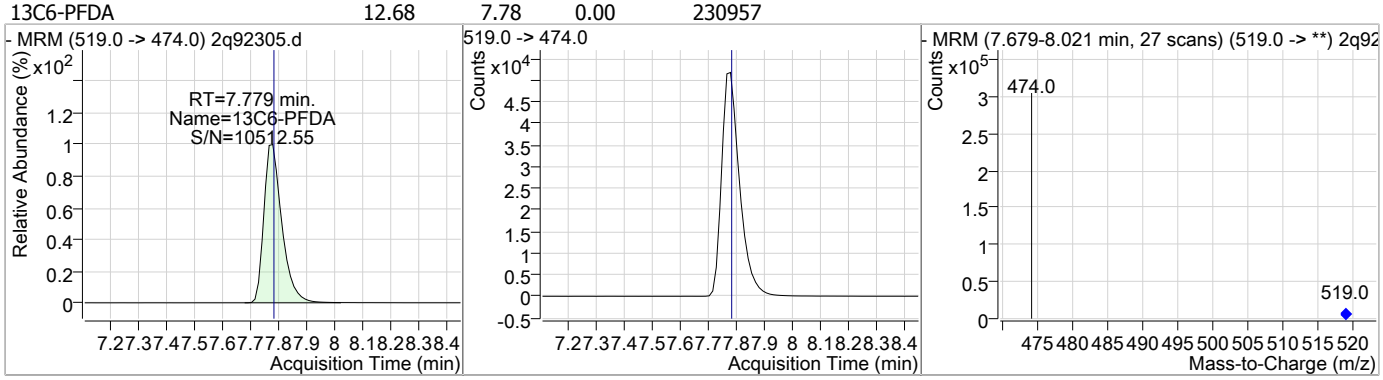




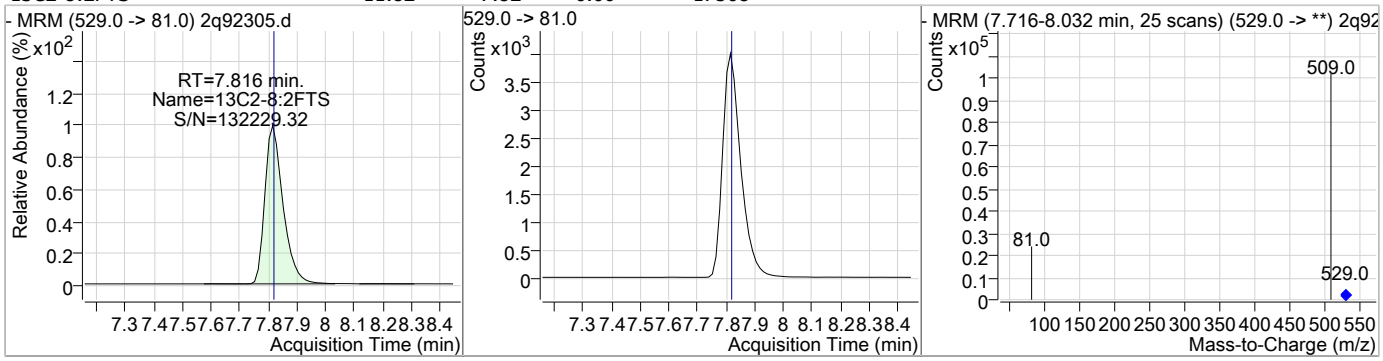


Perfluorinated Compounds by LC/MS/MS

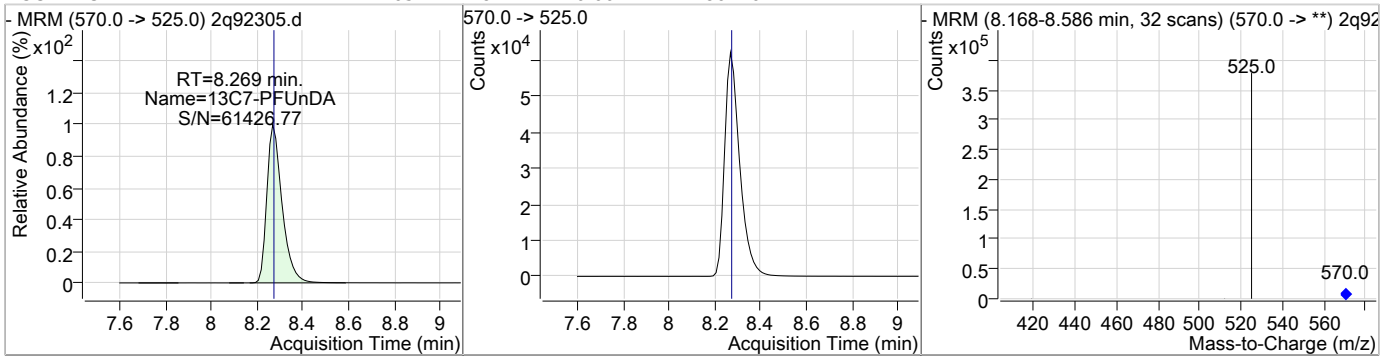
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	12.68	7.78	0.00	230957				



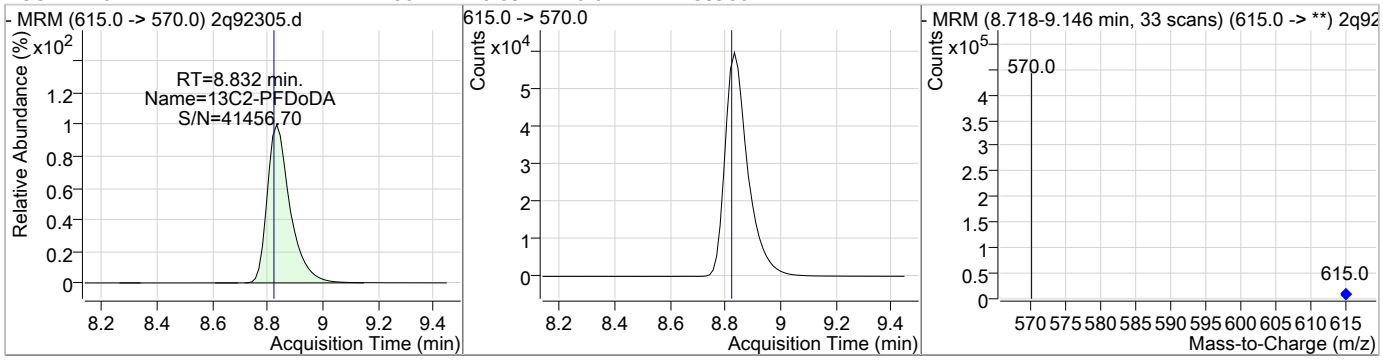
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.82	7.82	0.00	17508				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	12.65	8.27	0.00	286176				

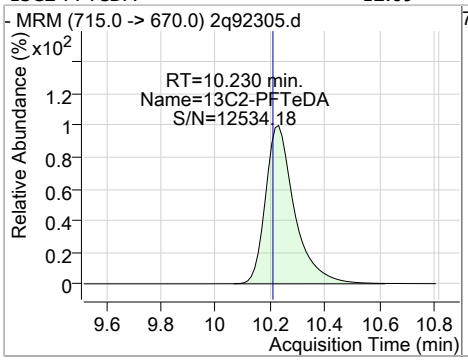


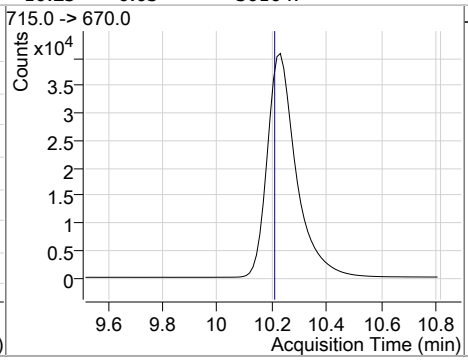
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	12.58	8.83	0.01	339867				

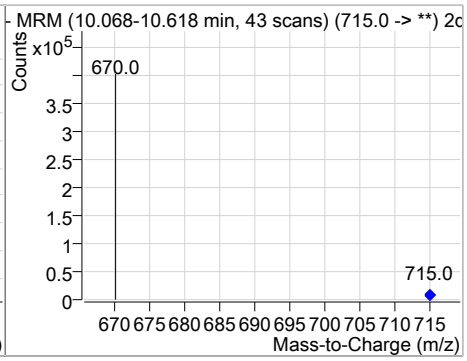


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.09	10.23	0.03	301047				







7.2.2

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92340.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 11:02:08 AM
Sample Name : iblk
Vial : P1-A1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

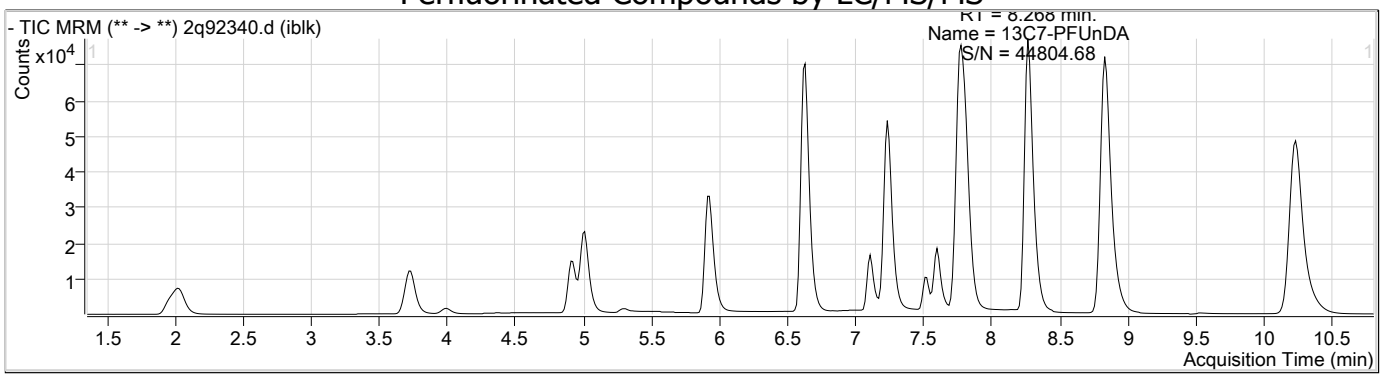
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	47133	20.00	µg/L	-0.025
M4-PFBA	2.014	217.0 -> 172.0	58552	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	66243	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	98384	20.00	µg/L	-0.013
M4-PFHpA	5.916	367.0 -> 322.0	141924	20.00	µg/L	-0.013
M8-PFOA	6.636	421.0 -> 376.0	192858	20.00	µg/L	-0.013
M9-PFNA	7.239	472.0 -> 427.0	215752	20.00	µg/L	-0.013
M6-PFDA	7.766	519.0 -> 474.0	278345	20.00	µg/L	-0.013
M7-PFUnDA	8.268	570.0 -> 525.0	350215	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	409950	20.00	µg/L	0.014
M2-PFTeDA	10.230	715.0 -> 670.0	356007	20.00	µg/L	0.025
M8-FOSA	7.111	506.0 -> 78.0	55317	20.00	µg/L	-0.038
M3-PFBS	3.992	302.0 -> 99.0	7733	20.00	µg/L	-0.013
M3-PFHxS	5.948	402.0 -> 99.0	11001	20.00	µg/L	-0.019
M8-PFOS	7.212	507.0 -> 99.0	16563	20.00	µg/L	-0.013
M2-4:2FTS	4.909	329.0 -> 81.0	7041	20.00	µg/L	-0.025
M2-6:2FTS	6.621	429.0 -> 81.0	15183	20.00	µg/L	-0.013
M2-8:2FTS	7.816	529.0 -> 81.0	21440	20.00	µg/L	0.000
M3-MeFOSAA	7.598	573.0 -> 419.0	58214	20.00	µg/L	-0.025
M3-HFPO-DA	5.306	287.0 -> 169.0	4172	20.00	µg/L	-0.013
M3-MeFOSA	7.514	515.0 -> 169.0	18860	20.00	µg/L	-0.038
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	7041	15.14	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.7%		
13C2-6:2FTS	6.621	429.0 -> 81.0	15183	14.68	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.4%		
13C2-8:2FTS	7.816	529.0 -> 81.0	21440	14.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.4%		
13C2-PFDoDA	8.832	615.0 -> 570.0	409950	15.18	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%		
13C2-PFTeDA	10.230	715.0 -> 670.0	356007	14.30	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.5%		
13C3-PFBS	3.992	302.0 -> 99.0	7733	15.21	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.0%		
13C3-PFHxS	5.948	402.0 -> 99.0	11001	15.43	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.2%		
13C4-PFBA	2.014	217.0 -> 172.0	58552	15.15	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.8%		
13C4-PFHpA	5.916	367.0 -> 322.0	141924	15.29	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%		
d5-EtFOSAA	7.735	589.0 -> 419.0	47133	15.53	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%		
13C5-PFHxA	5.014	318.0 -> 273.0	98384	14.57	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.9%		
13C5-PFPeA	3.724	268.0 -> 223.0	66243	14.53	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

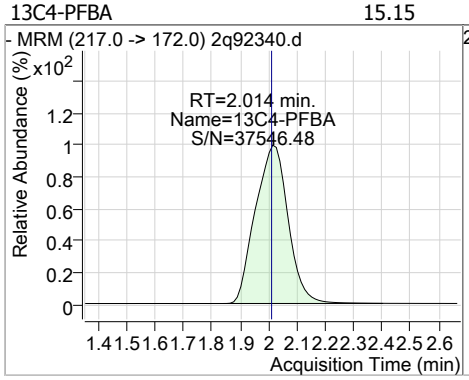
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.7%	
13C6-PFDA	7.766	519.0 -> 474.0	278345	15.28 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%	
13C7-PFUnDA	8.268	570.0 -> 525.0	350215	15.48 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%	
13C8-FOSA	7.111	506.0 -> 78.0	55317	15.03 µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%	
13C8-PFOA	6.636	421.0 -> 376.0	192858	14.98 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.9%	
13C8-PFOS	7.212	507.0 -> 99.0	16563	15.96 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%	
13C9-PFNA	7.239	472.0 -> 427.0	215752	14.79 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%	
d3-MeFOSAA	7.598	573.0 -> 419.0	58214	15.18 µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%	
13C3-HFPO-DA	5.306	287.0 -> 169.0	4172	16.02 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.1%	
d3-MeFOSA	7.514	515.0 -> 169.0	18860	13.47 µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.4%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	
MeFOSA	-	512.0 -> 219.0	-	N.D.	

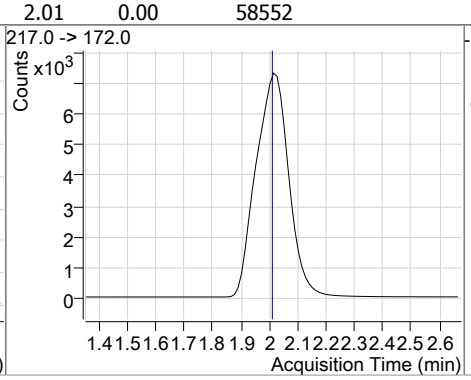
= Qualifier out of range, m = manually integrated, + = Area summed

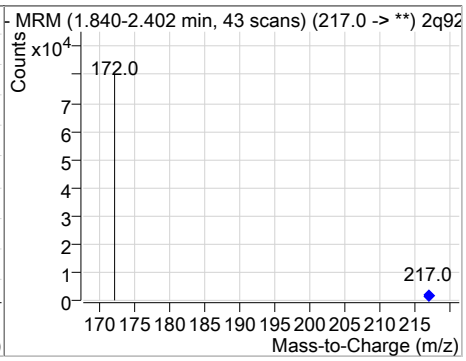
Perfluorinated Compounds by LC/MS/MS



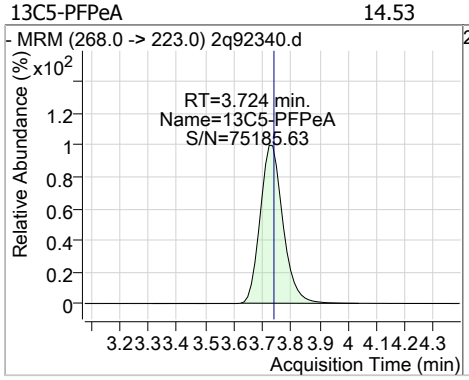
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.15	2.01	0.00	58552				

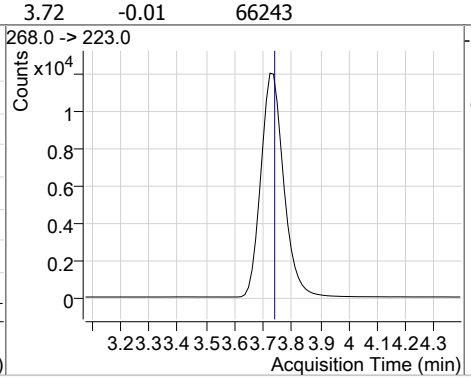


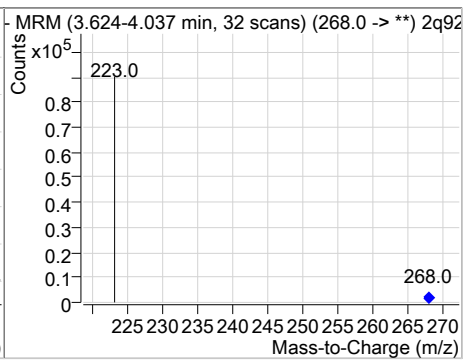




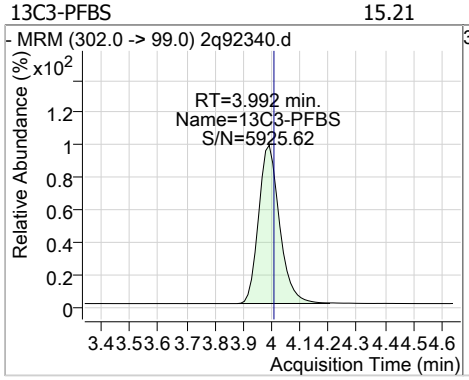
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	14.53	3.72	-0.01	66243				

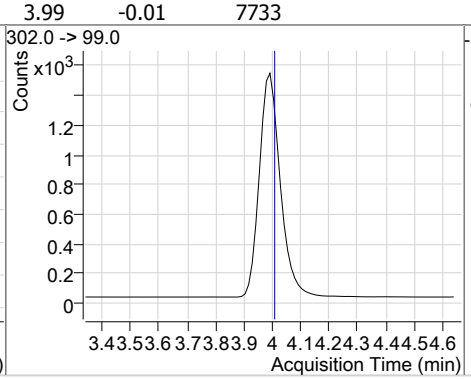


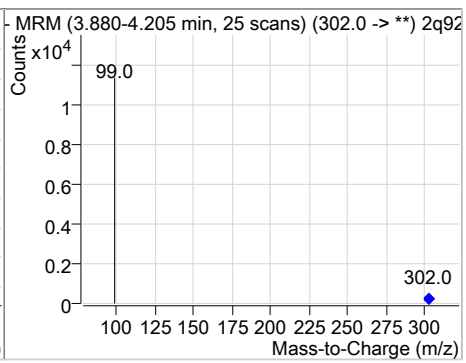




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.21	3.99	-0.01	7733				

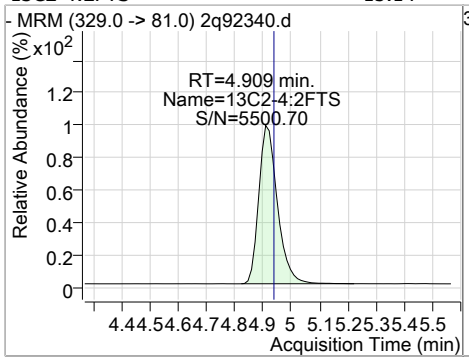


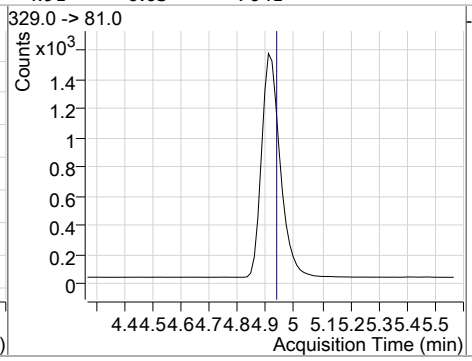


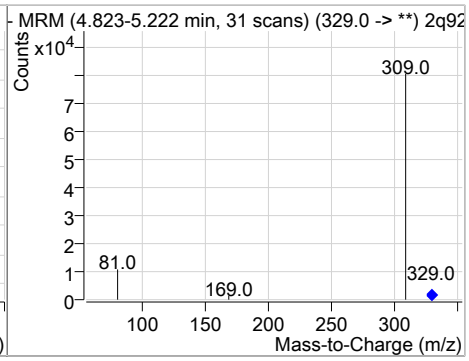


Perfluorinated Compounds by LC/MS/MS

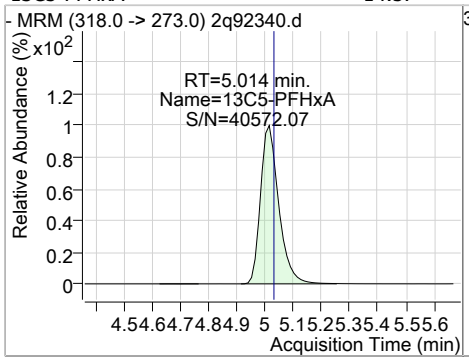
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.14	4.91	-0.03	7041				

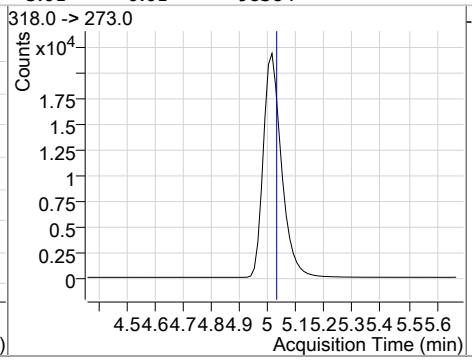


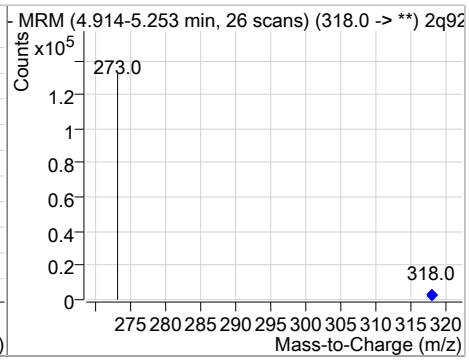




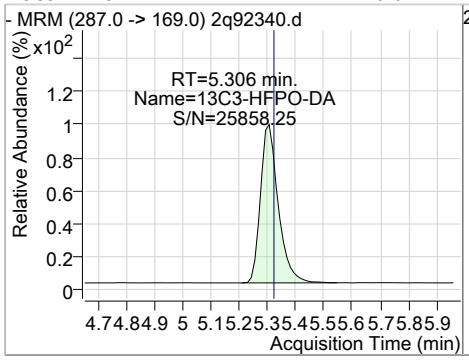
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.57	5.01	-0.01	98384				

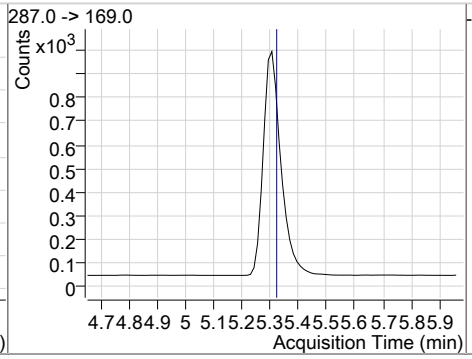


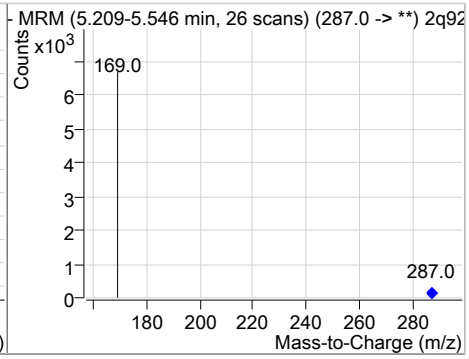




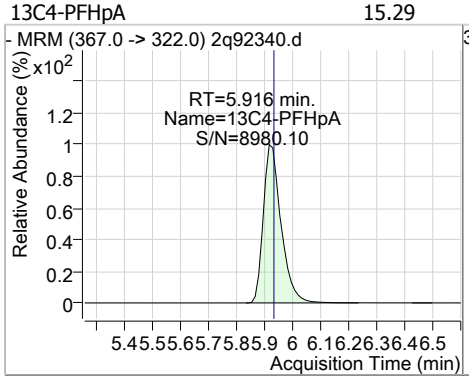
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	16.02	5.31	-0.01	4172				

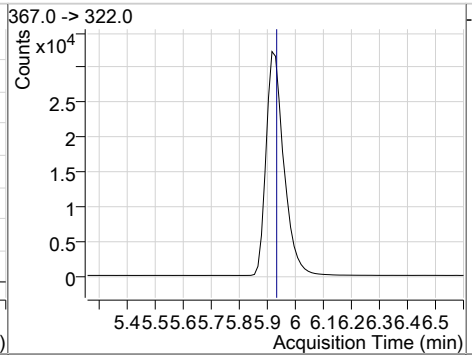


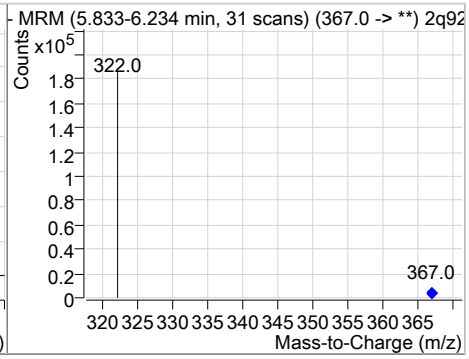




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.29	5.92	-0.01	141924				

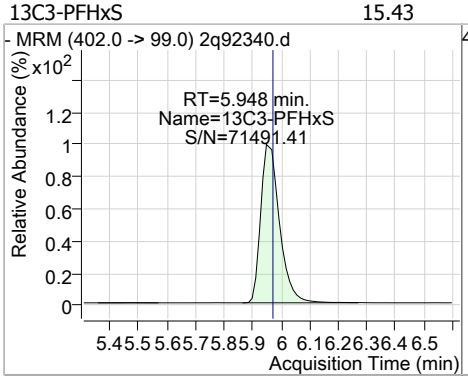


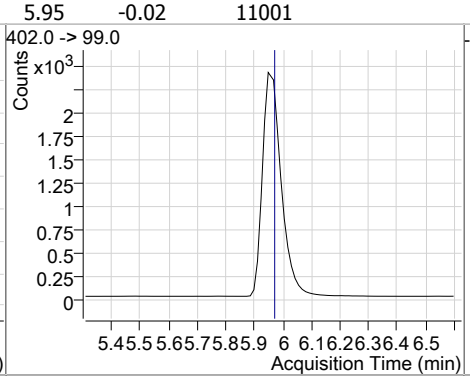


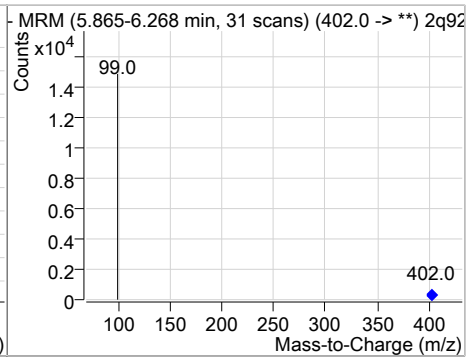


Perfluorinated Compounds by LC/MS/MS

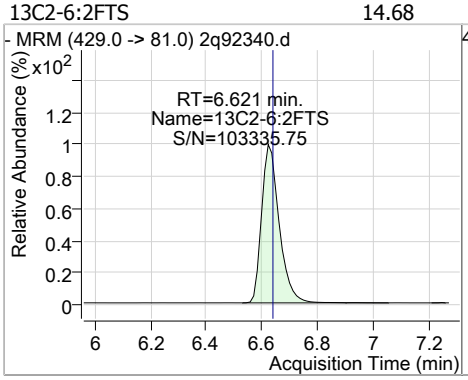
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.43	5.95	-0.02	11001				

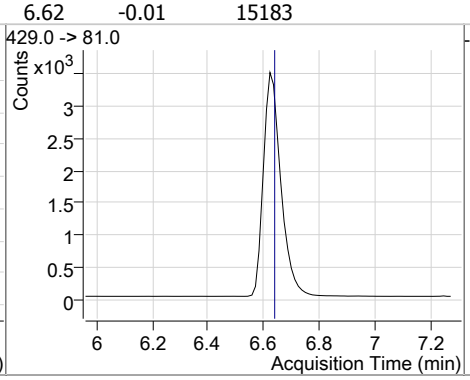


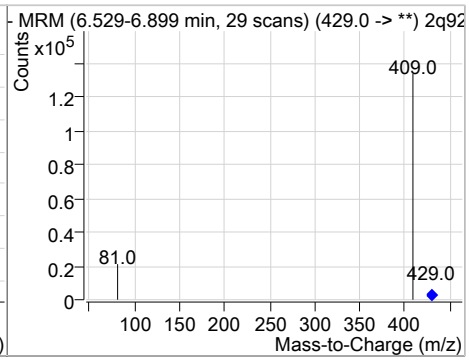




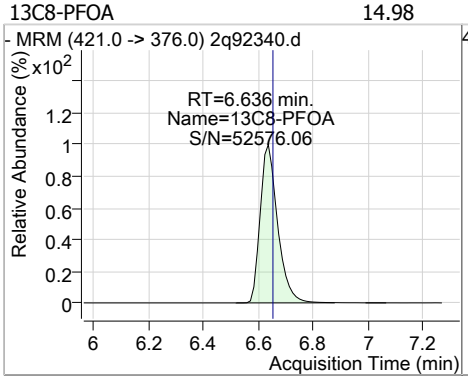
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	14.68	6.62	-0.01	15183				

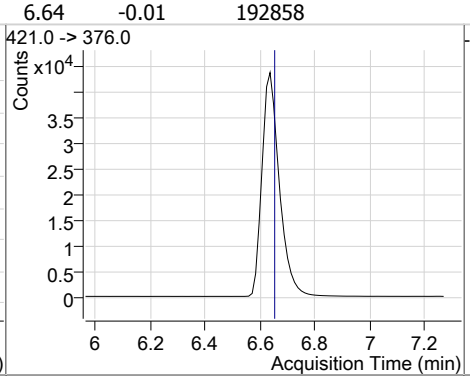


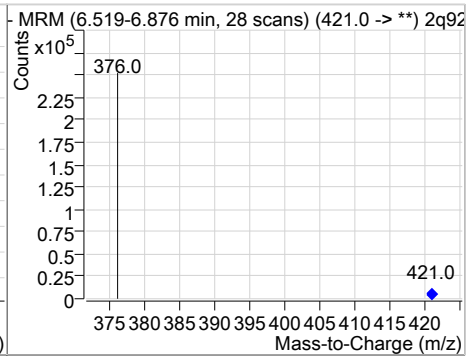




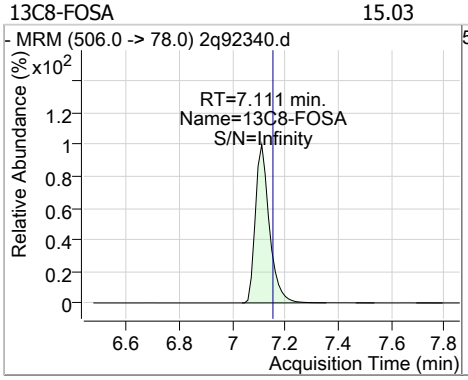
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.98	6.64	-0.01	192858				

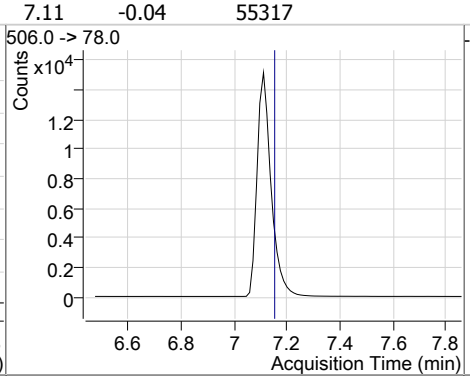


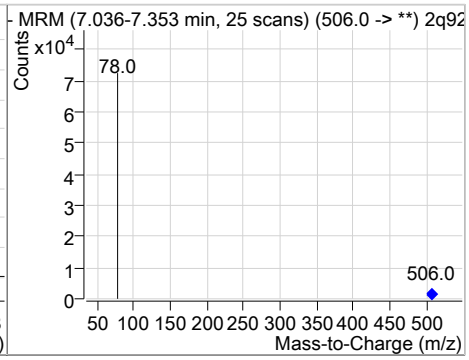




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.03	7.11	-0.04	55317				

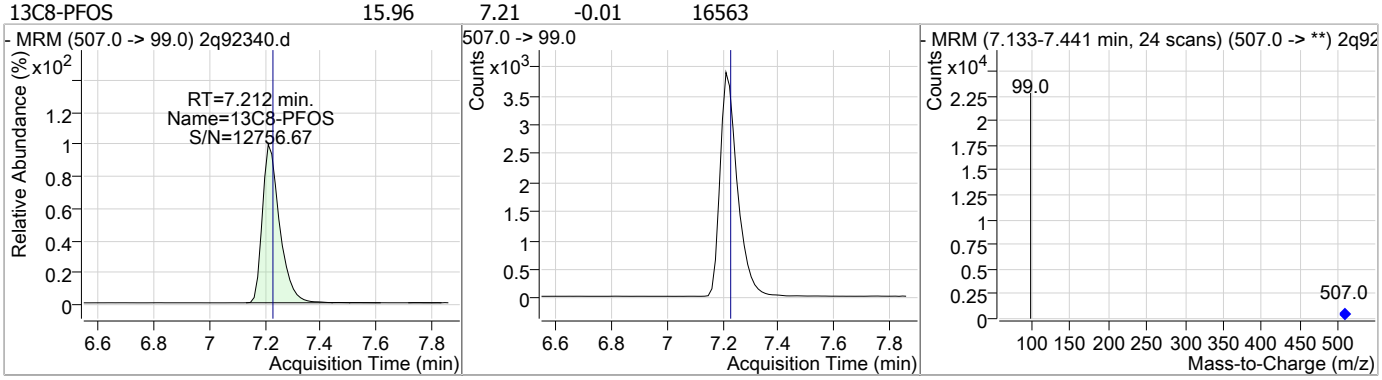




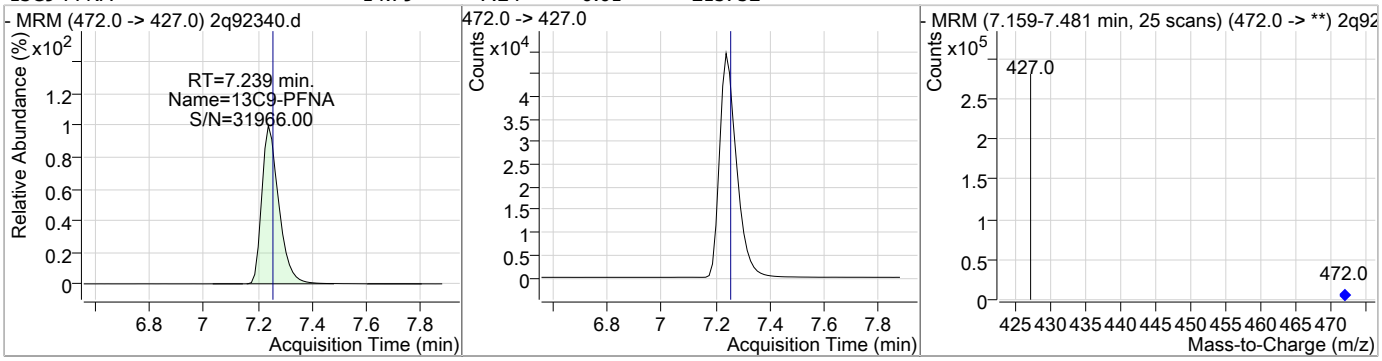


Perfluorinated Compounds by LC/MS/MS

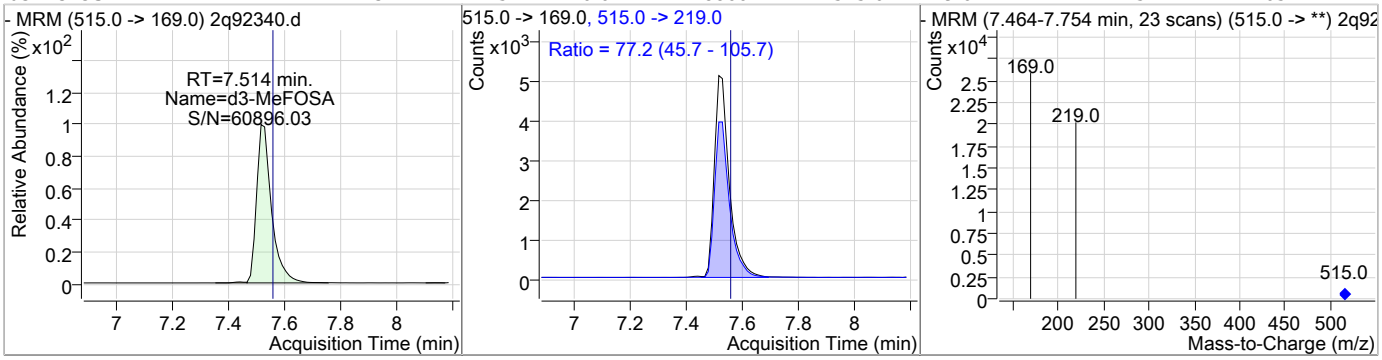
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.96	7.21	-0.01	16563				



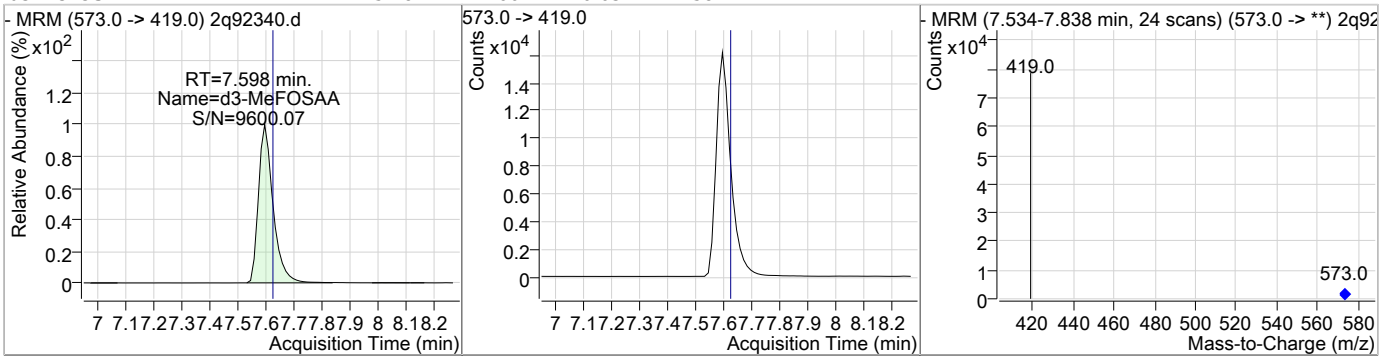
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	14.79	7.24	-0.01	215752				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	13.47	7.51	-0.04	18860	515.0 -> 219.0	77.2	45.7	105.7

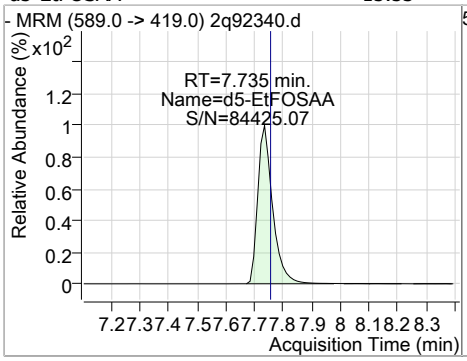


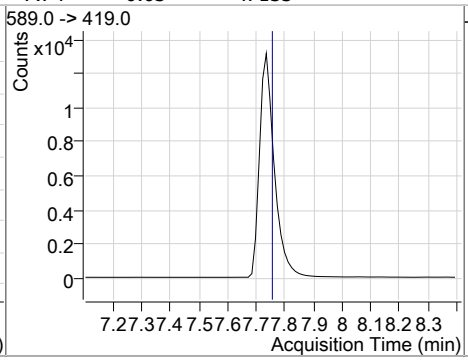
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.18	7.60	-0.03	58214				

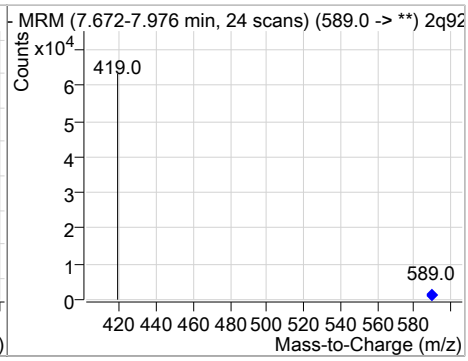


Perfluorinated Compounds by LC/MS/MS

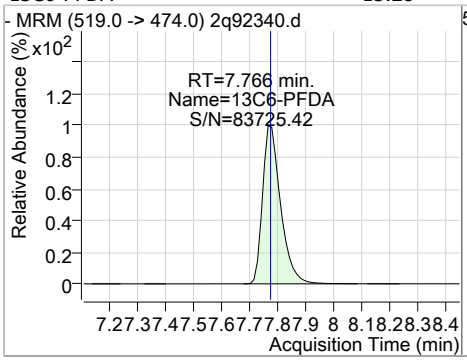
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	15.53	7.74	-0.03	47133				

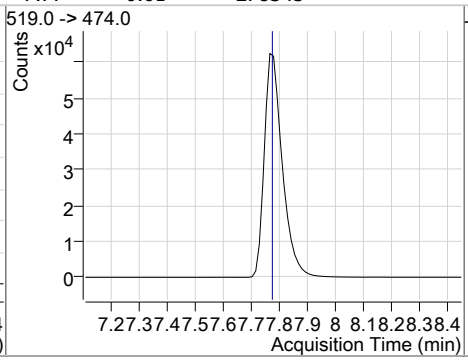


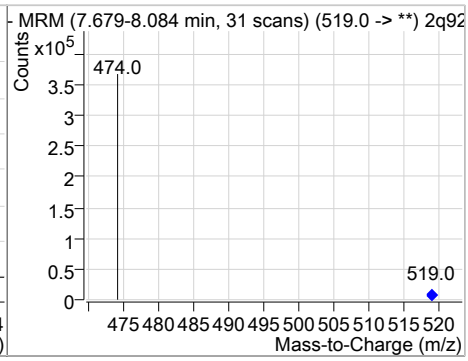




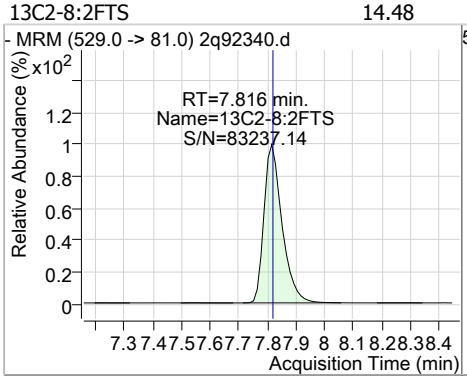
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.28	7.77	-0.01	278345				

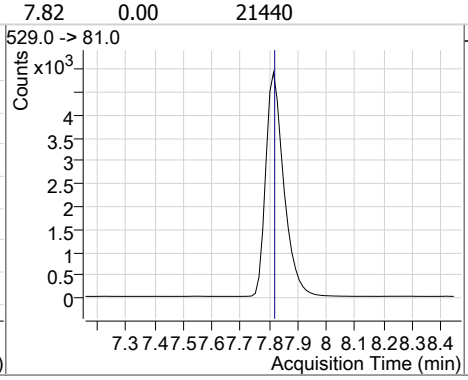


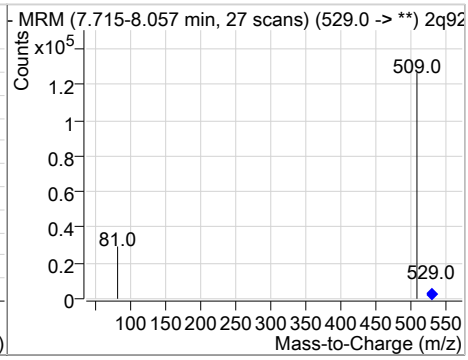




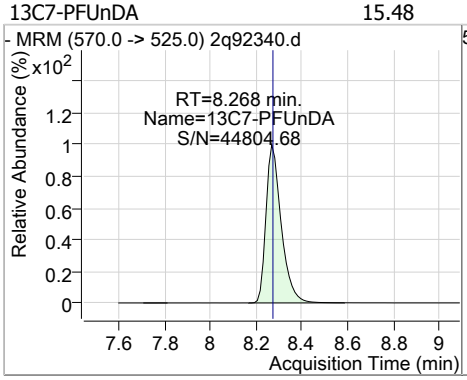
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.48	7.82	0.00	21440				

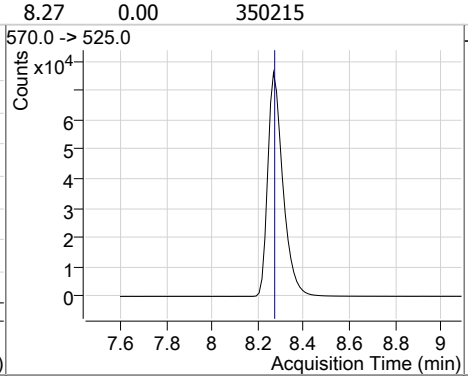


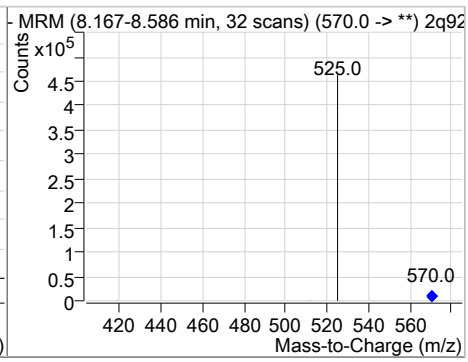




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.48	8.27	0.00	350215				

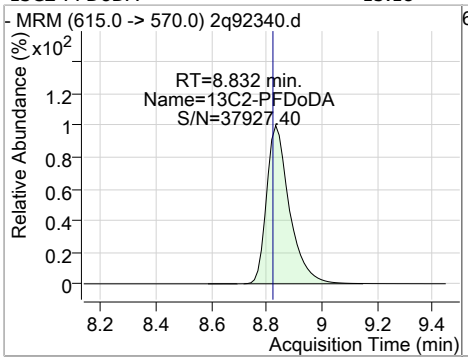


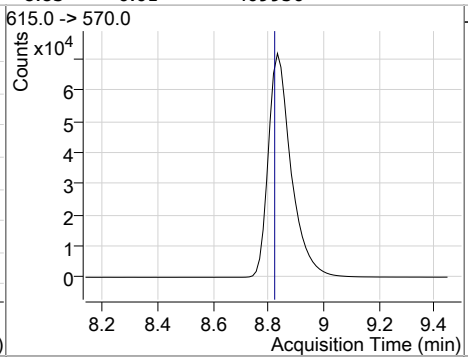


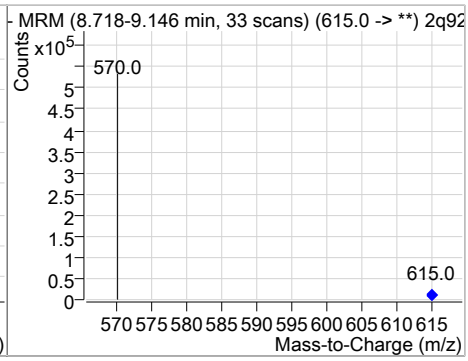


Perfluorinated Compounds by LC/MS/MS

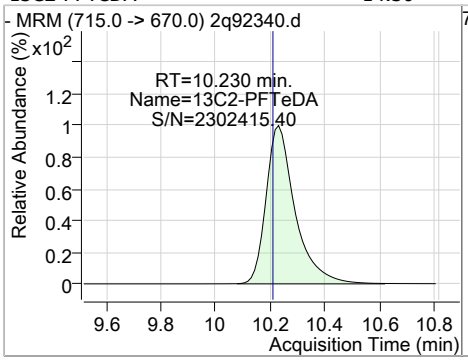
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	15.18	8.83	0.01	409950				

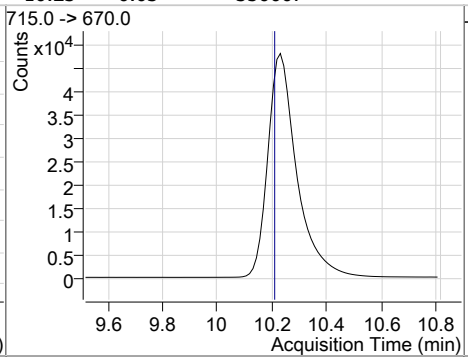


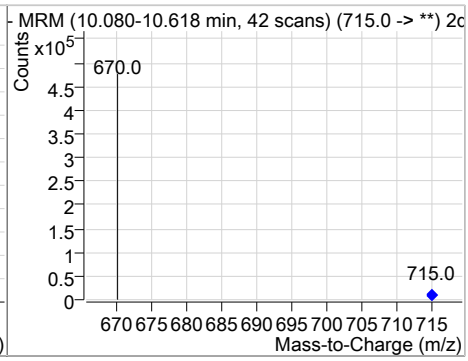




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.30	10.23	0.03	356007				







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92308.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 3:50:16 PM
Sample Name : op91428-BS
Vial : P6-A1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

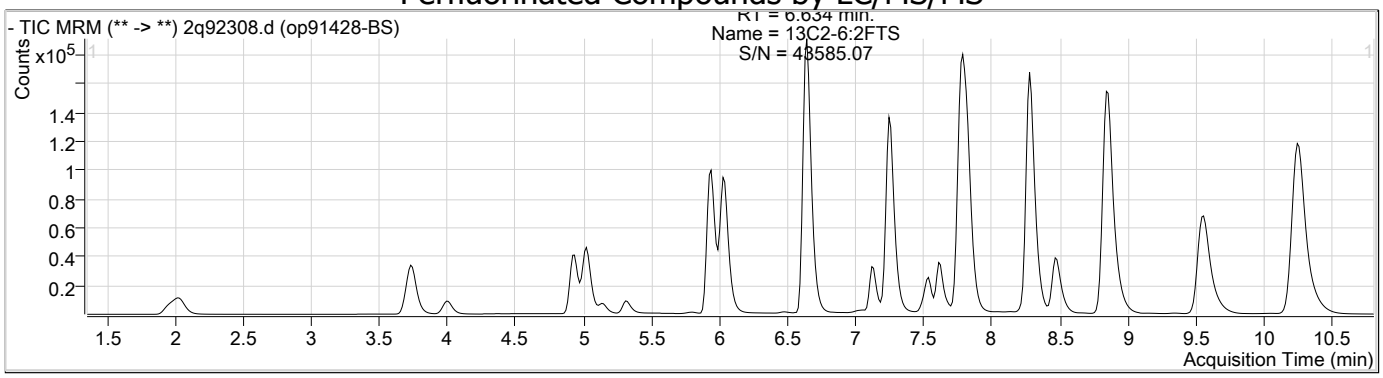
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	47206	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	64423	20.00	µg/L	0.013
M5-PFPeA	3.736	268.0 -> 223.0	74366	20.00	µg/L	0.000
M5-PFHxA	5.027	318.0 -> 273.0	111261	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	156853	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	218698	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	247269	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	308092	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	385258	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	447246	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	393863	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	58163	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	8589	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	12468	20.00	µg/L	0.000
M8-PFOS	7.237	507.0 -> 99.0	17396	20.00	µg/L	0.013
M2-4:2FTS	4.921	329.0 -> 81.0	7966	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	17461	20.00	µg/L	0.000
M2-8:2FTS	7.829	529.0 -> 81.0	24425	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	59824	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4466	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	16275	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	7966	17.12	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.6%		
13C2-6:2FTS	6.634	429.0 -> 81.0	17461	16.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C2-8:2FTS	7.829	529.0 -> 81.0	24425	16.49	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.5%		
13C2-PFDoDA	8.845	615.0 -> 570.0	447246	16.56	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.8%		
13C2-PFTeDA	10.243	715.0 -> 670.0	393863	15.82	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.1%		
13C3-PFBS	4.004	302.0 -> 99.0	8589	16.89	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C3-PFHxS	5.967	402.0 -> 99.0	12468	17.49	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.4%		
13C4-PFBA	2.027	217.0 -> 172.0	64423	16.67	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.4%		
13C4-PFHpA	5.941	367.0 -> 322.0	156853	16.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.5%		
d5-EtFOSAA	7.748	589.0 -> 419.0	47206	15.55	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.8%		
13C5-PFHxA	5.027	318.0 -> 273.0	111261	16.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.4%		
13C5-PFPeA	3.736	268.0 -> 223.0	74366	16.32	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

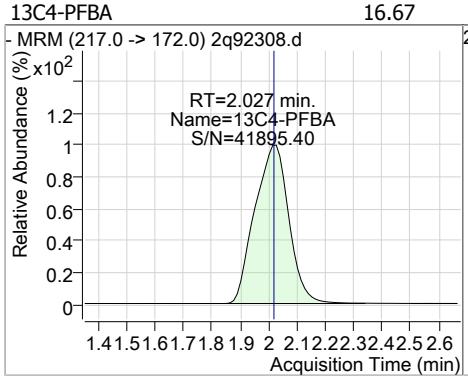
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%			
13C6-PFDA	7.792	519.0 -> 474.0	308092	16.91	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.6%			
13C7-PFUnDA	8.282	570.0 -> 525.0	385258	17.03	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.1%			
13C8-FOSA	7.124	506.0 -> 78.0	58163	15.80	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.0%			
13C8-PFOA	6.649	421.0 -> 376.0	218698	16.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.9%			
13C8-PFOS	7.237	507.0 -> 99.0	17396	16.76	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%			
13C9-PFNA	7.252	472.0 -> 427.0	247269	16.95	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%			
d3-MeFOSAA	7.610	573.0 -> 419.0	59824	15.60	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.0%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4466	17.15	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.7%			
d3-MeFOSA	7.539	515.0 -> 169.0	16275	11.63	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.1%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	76531	18.34	µg/L		99
6:2FTS	6.635	427.0 -> 407.0	120997	18.79	µg/L		100
8:2FTS	7.829	527.0 -> 507.0	111993	19.25	µg/L		100
EtFOSAA	7.748	584.0 -> 419.0	43971	18.70	µg/L	m	97
FOSA	7.125	498.0 -> 78.0	56007	18.34	µg/L		99
MeFOSAA	7.623	570.0 -> 419.0	52156	18.98	µg/L	m	99
PFBA	2.021	213.0 -> 169.0	30801	18.65	µg/L		100
PFBS	3.994	299.0 -> 80.0	26955	18.82	µg/L		99
PFDA	7.793	513.0 -> 469.0	291284	18.66	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	400414	18.66	µg/L		100
PFDS	8.228	599.0 -> 80.0	13758	19.58	µg/L		98
PFHpA	5.930	363.0 -> 319.0	242231	18.89	µg/L		99
PFHpS	6.645	449.0 -> 80.0	27946	19.07	µg/L		98
PFHxA	5.028	313.0 -> 269.0	76924	18.69	µg/L		99
PFHxS	5.967	399.0 -> 80.0	29948	19.14	µg/L	m	96
PFNA	7.252	463.0 -> 419.0	254225	18.49	µg/L		99
PFNS	7.751	549.0 -> 80.0	23578	19.24	µg/L		99
PFOA	6.649	413.0 -> 369.0	223544	18.82	µg/L		100
PFOS	7.238	499.0 -> 80.0	28693	18.84	µg/L	m	97
PFPeA	3.739	263.0 -> 219.0	110880	19.36	µg/L		100
PFPeS	5.145	349.0 -> 80.0	18773	19.17	µg/L		100
PFTeDA	10.247	713.0 -> 669.0	461338	19.24	µg/L		100
PFTrDA	9.562	663.0 -> 619.0	454262	18.08	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	326189	18.49	µg/L		100
11Cl-PF3OUdS	8.466	631.0 -> 451.0	139347	19.33	µg/L		100
9Cl-PF3ONS	7.511	531.0 -> 351.0	29421	17.62	µg/L		99
ADONA	6.032	377.0 -> 251.0	298120	18.14	µg/L		100
HFPO-DA	5.314	329.0 -> 169.0	30853	19.16	µg/L		98
MeFOSA	7.541	512.0 -> 219.0	12601	18.36	µg/L		99

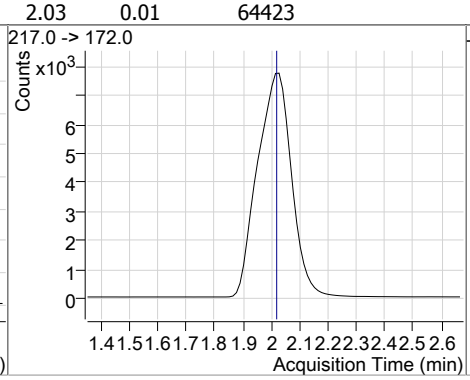
= Qualifier out of range, m = manually integrated, + = Area summed

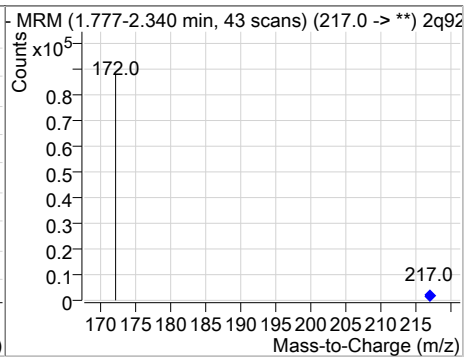
Perfluorinated Compounds by LC/MS/MS



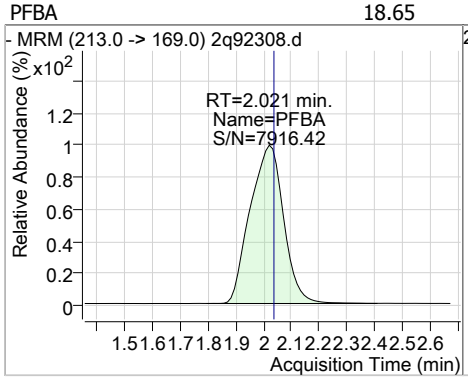
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.67	2.03	0.01	64423				

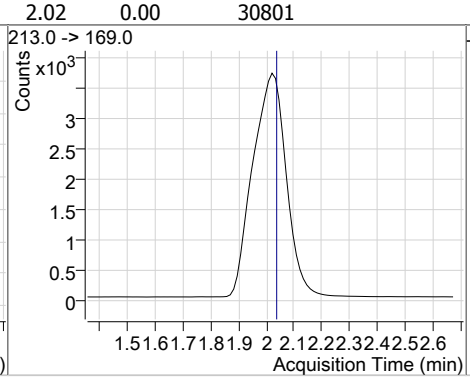


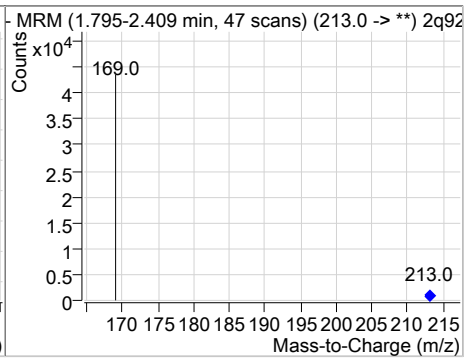




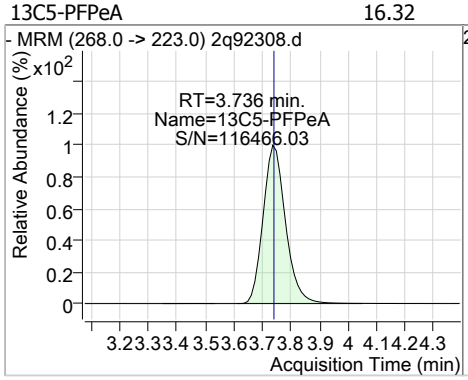
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	18.65	2.02	0.00	30801				

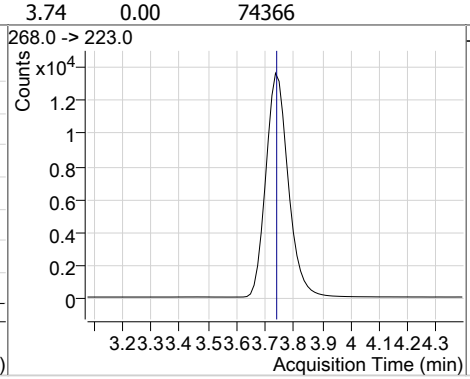


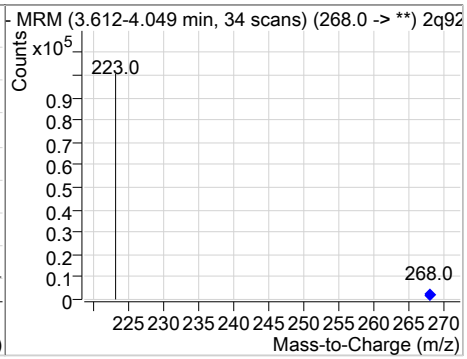




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.32	3.74	0.00	74366				

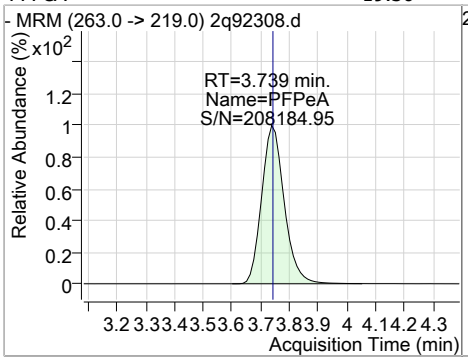


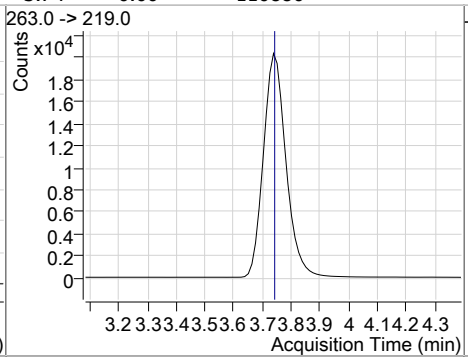


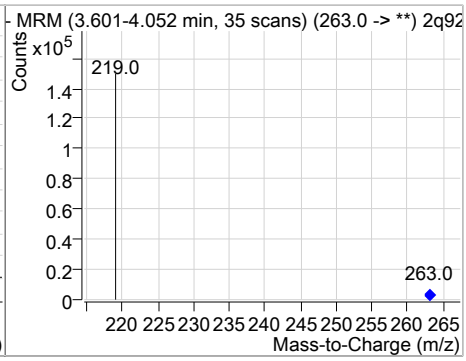


Perfluorinated Compounds by LC/MS/MS

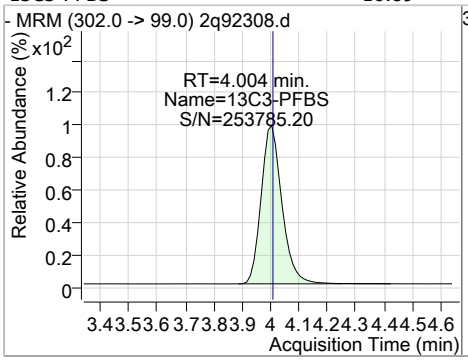
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.36	3.74	0.00	110880				

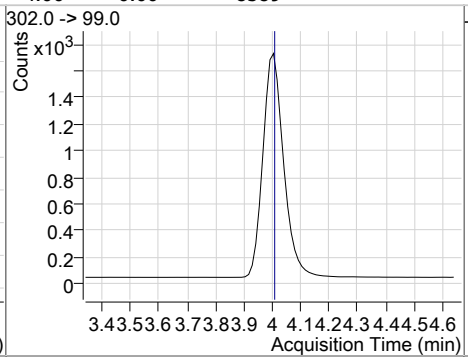


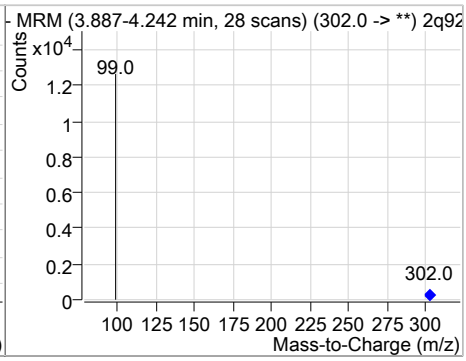




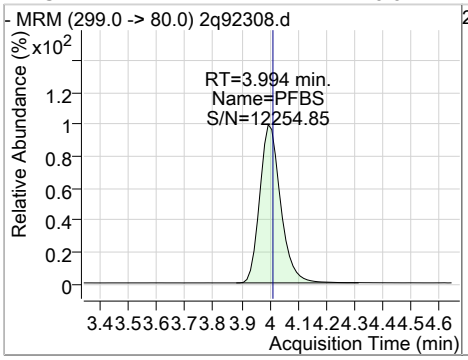
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.89	4.00	0.00	8589				

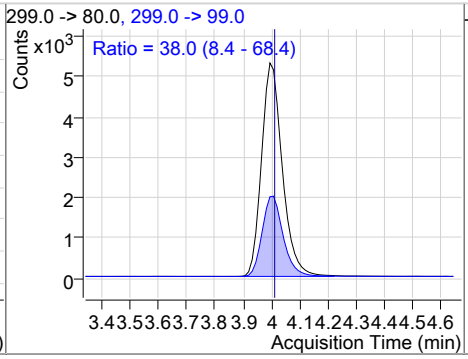


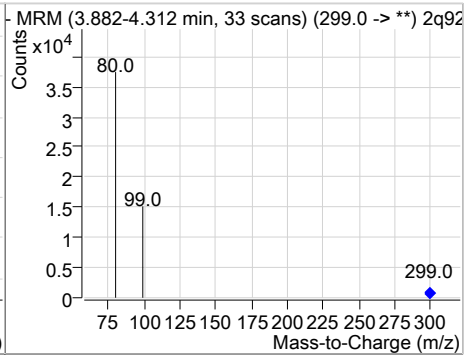




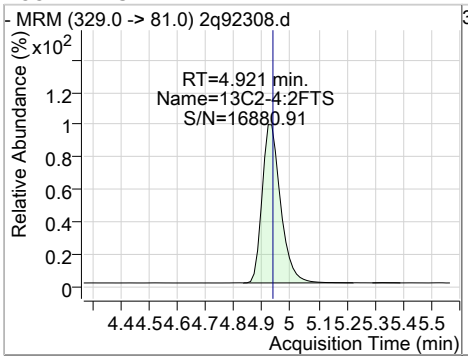
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	18.82	3.99	-0.01	26955	299.0 -> 99.0	38.0	8.4	68.4

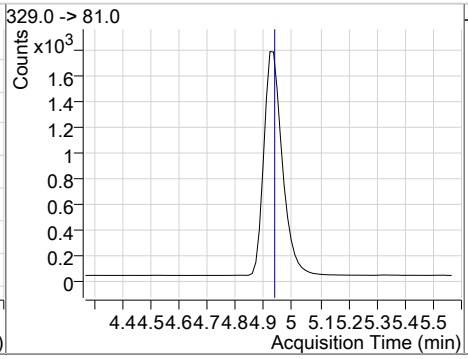


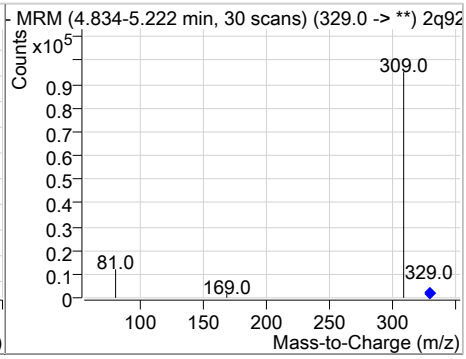




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.12	4.92	-0.01	7966				

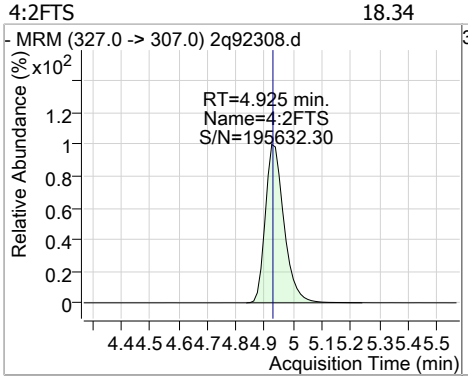


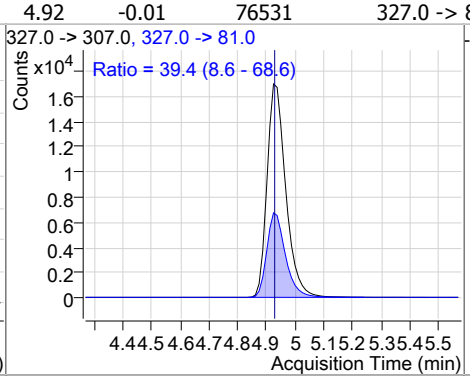


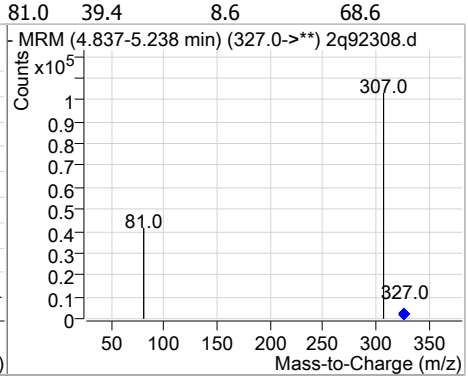


Perfluorinated Compounds by LC/MS/MS

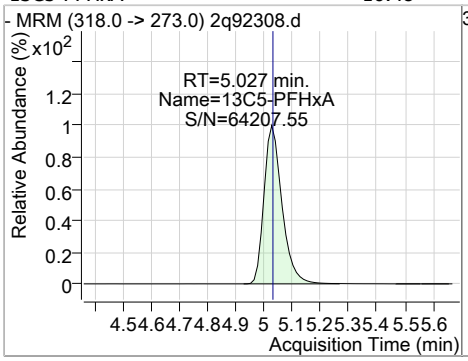
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	18.34	4.92	-0.01	76531	327.0 -> 81.0	39.4	8.6	68.6

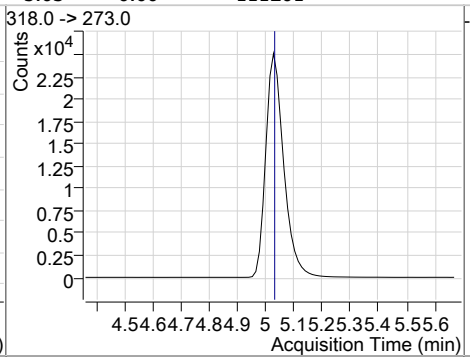


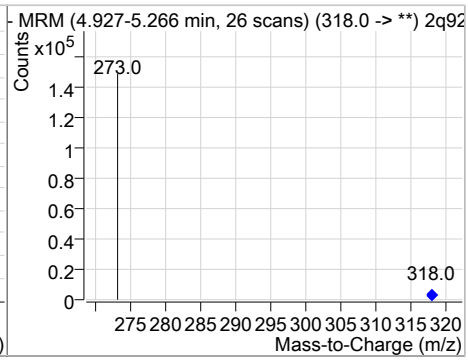




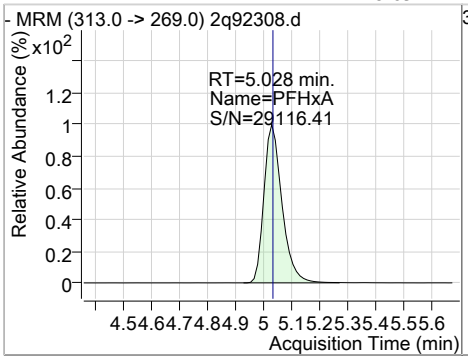
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.48	5.03	0.00	111261				

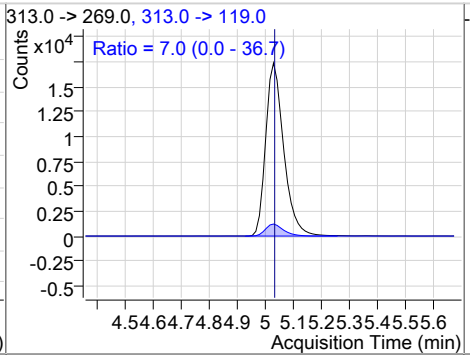


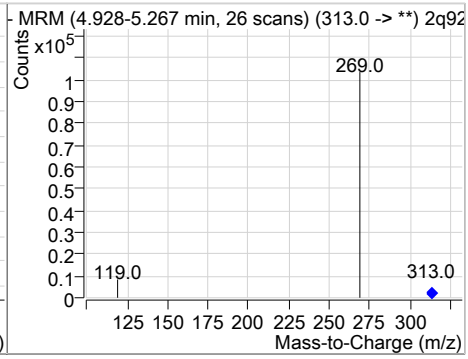




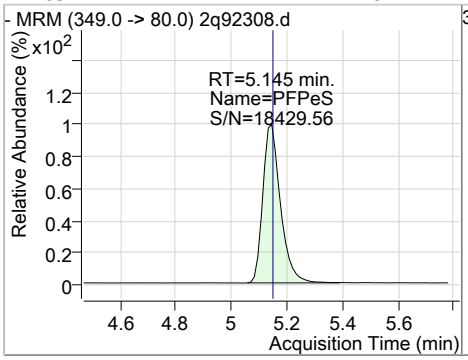
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.69	5.03	0.00	76924	313.0 -> 119.0	7.0	0.0	36.7

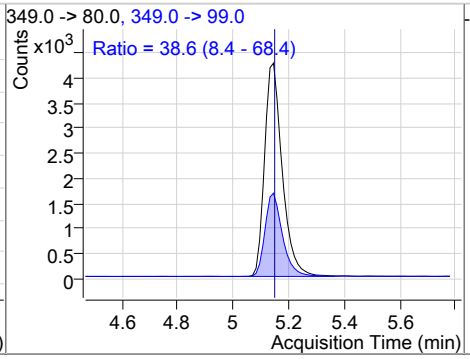


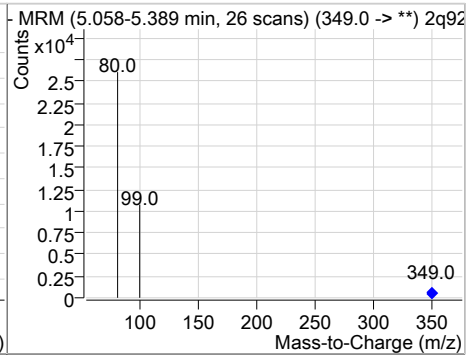




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.17	5.15	0.00	18773	349.0 -> 99.0	38.6	8.4	68.4

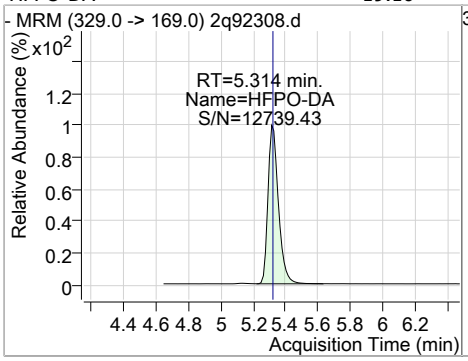


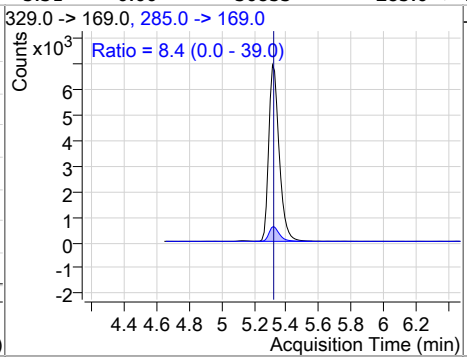


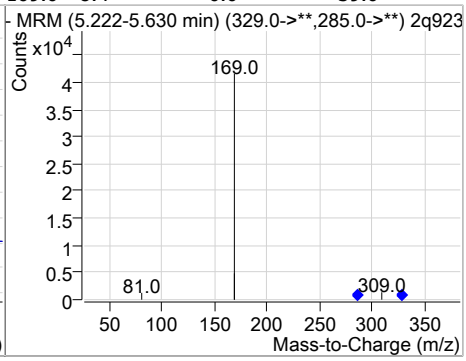


Perfluorinated Compounds by LC/MS/MS

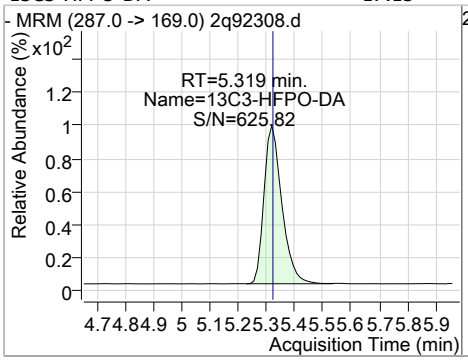
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.16	5.31	0.00	30853	285.0 -> 169.0	8.4	0.0	39.0

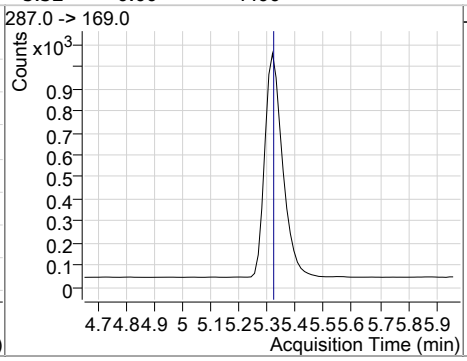


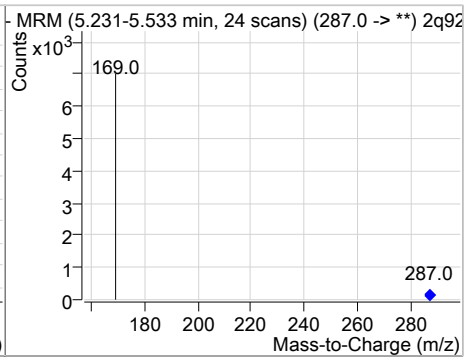




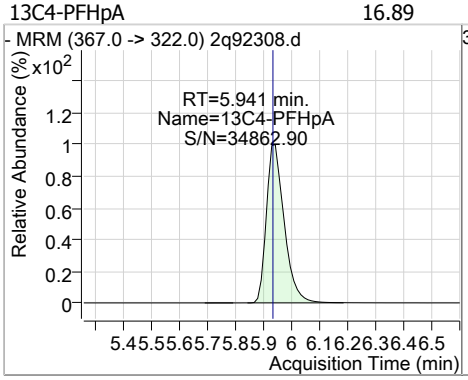
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	17.15	5.32	0.00	4466				

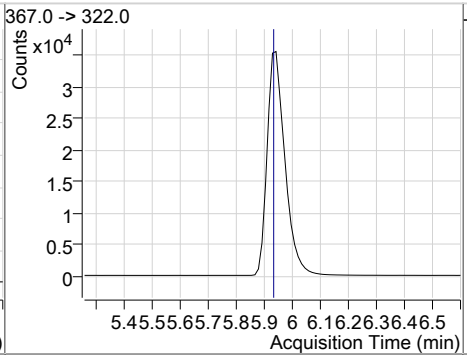


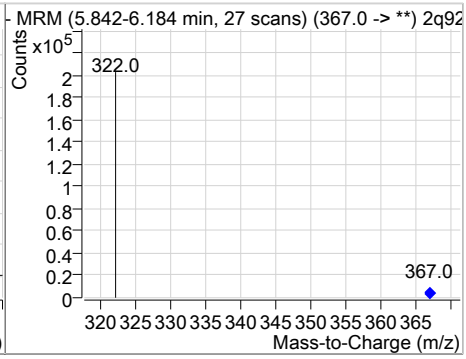




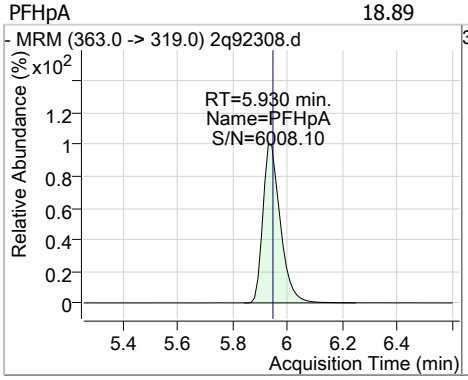
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.89	5.94	0.01	156853				

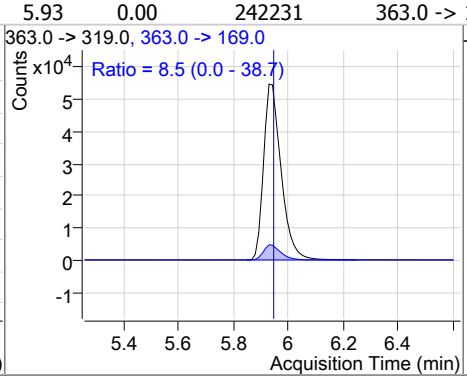


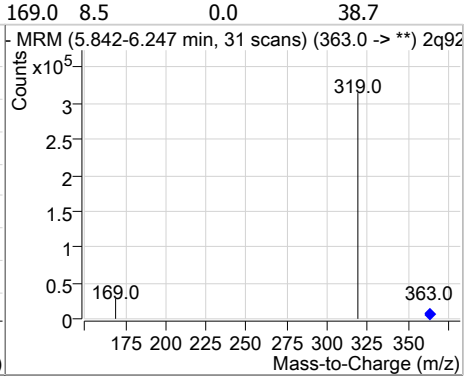




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	18.89	5.93	0.00	242231	363.0 -> 169.0	8.5	0.0	38.7

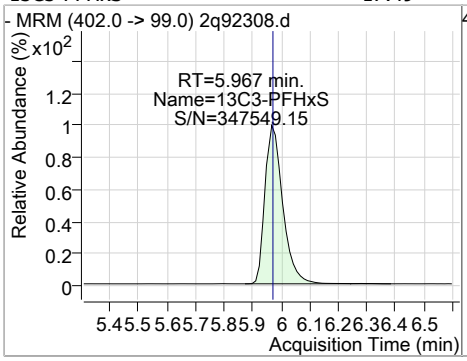


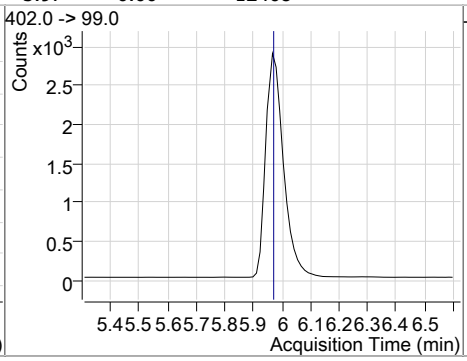


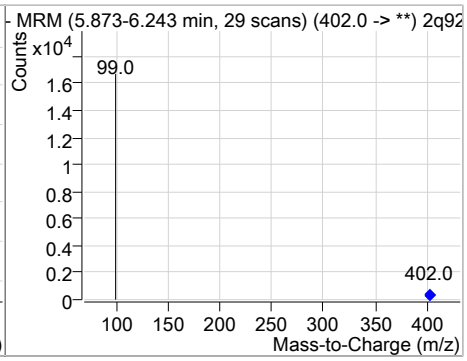


Perfluorinated Compounds by LC/MS/MS

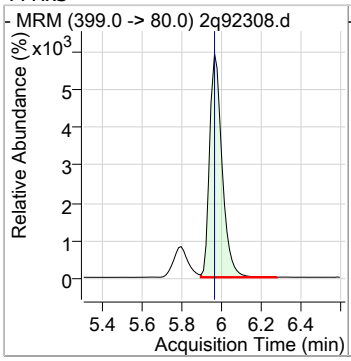
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.49	5.97	0.00	12468				

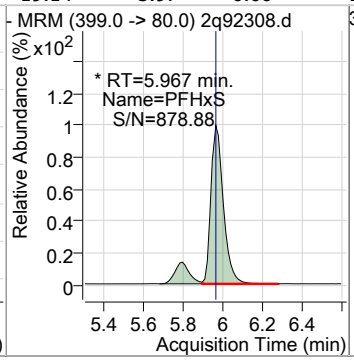


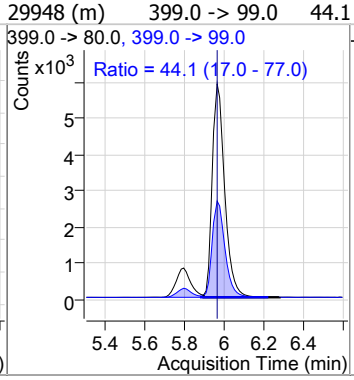


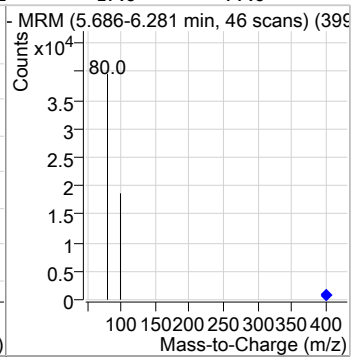


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.14	5.97	0.00	29948 (m)	399.0 -> 99.0	44.1	17.0	77.0

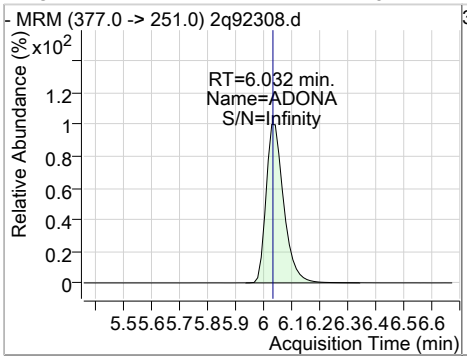


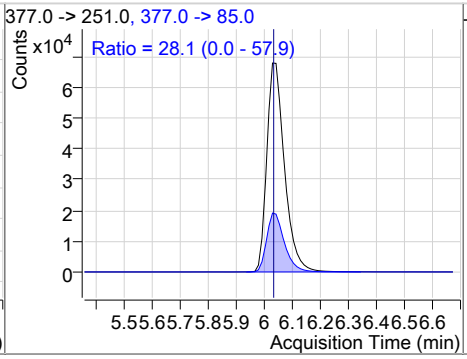


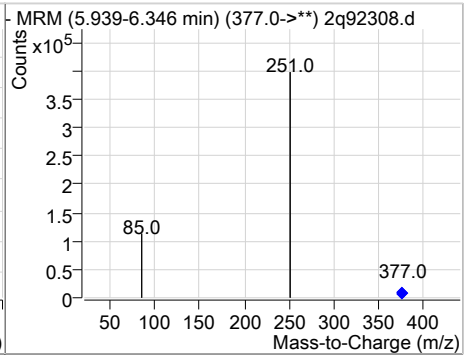




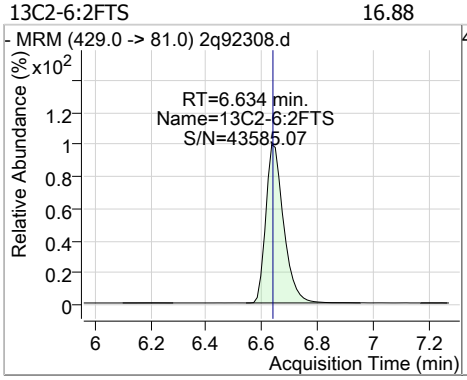
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	18.14	6.03	0.00	298120	377.0 -> 85.0	28.1	0.0	57.9

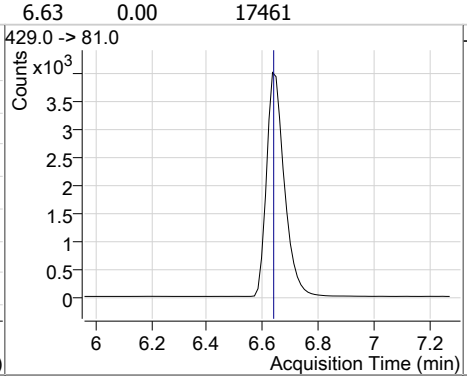


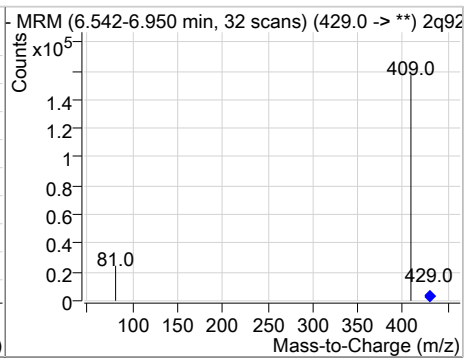




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	16.88	6.63	0.00	17461				

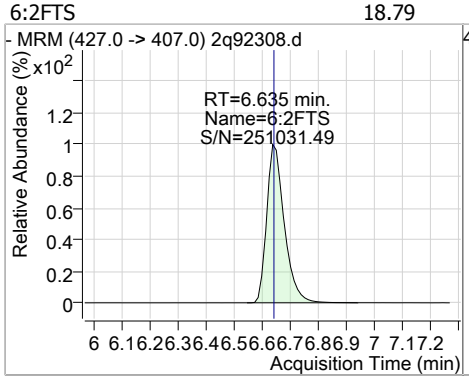


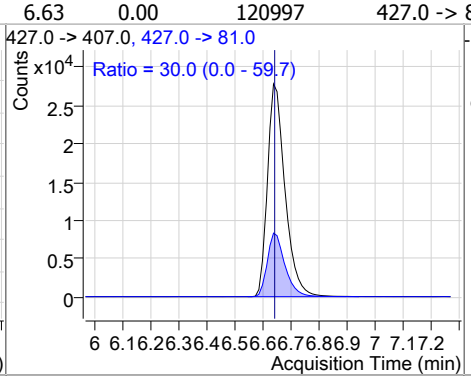


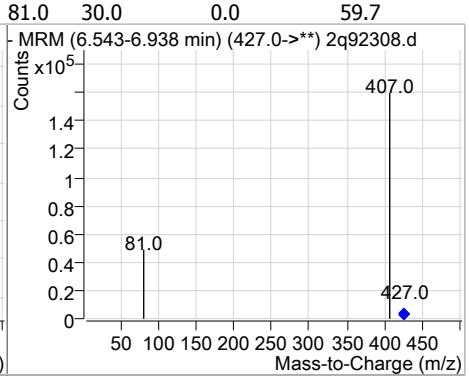


Perfluorinated Compounds by LC/MS/MS

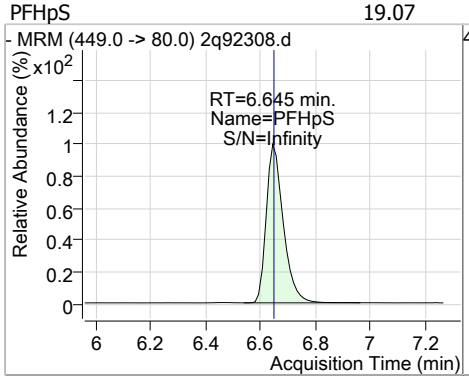
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.79	6.63	0.00	120997	427.0 -> 81.0	30.0	0.0	59.7

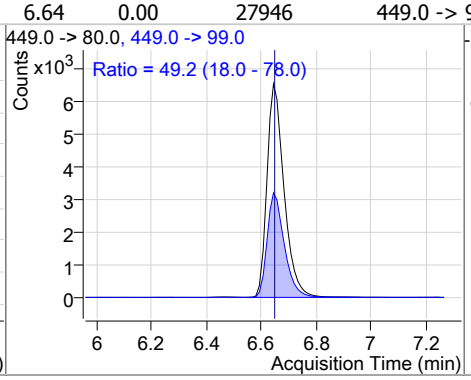


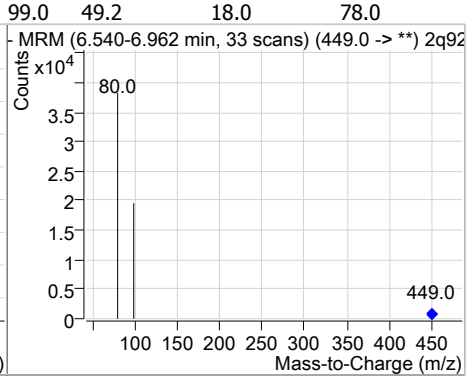




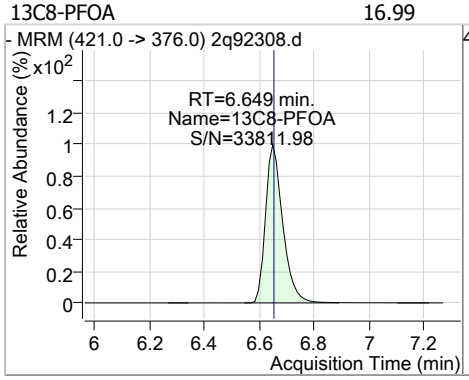
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	19.07	6.64	0.00	27946	449.0 -> 99.0	49.2	18.0	78.0

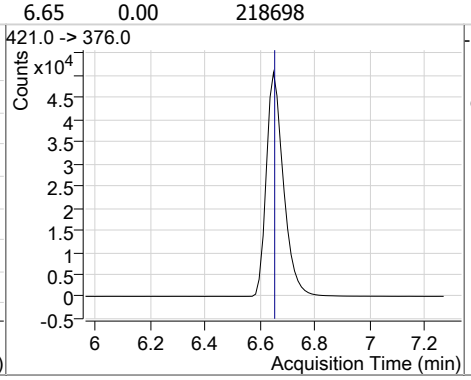


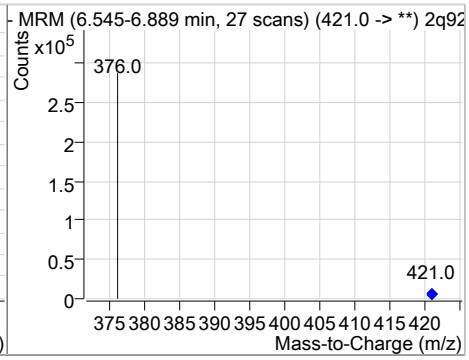




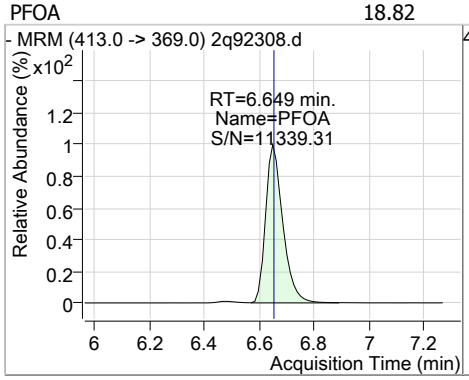
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.99	6.65	0.00	218698				

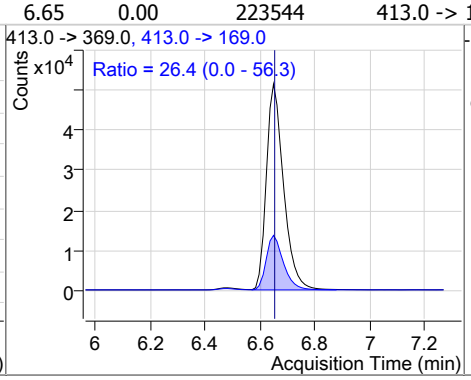


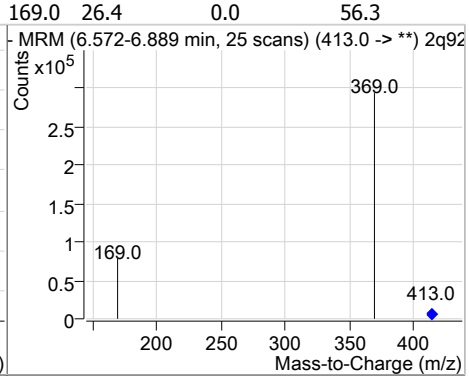




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	18.82	6.65	0.00	223544	413.0 -> 169.0	26.4	0.0	56.3

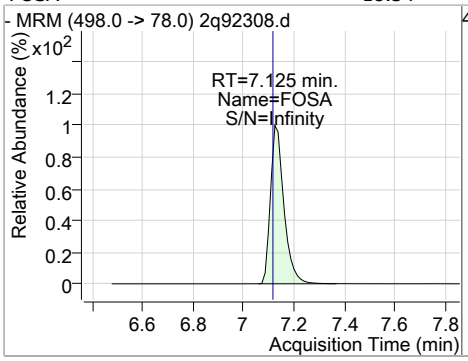


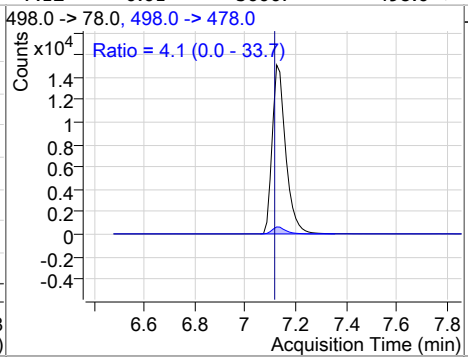


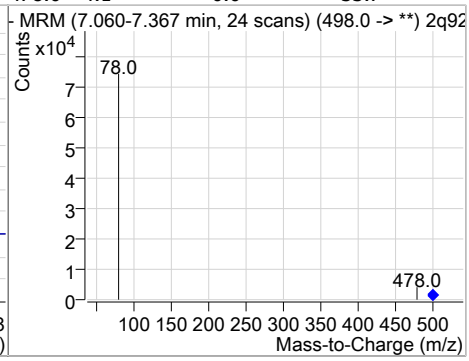


Perfluorinated Compounds by LC/MS/MS

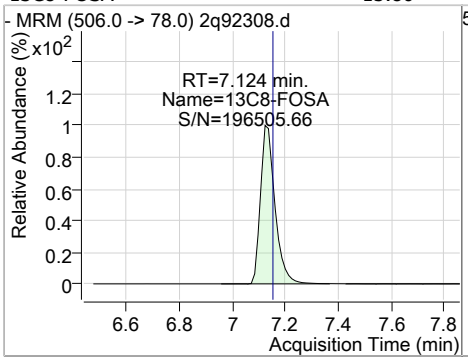
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	18.34	7.12	-0.01	56007	498.0 -> 478.0	4.1	0.0	33.7

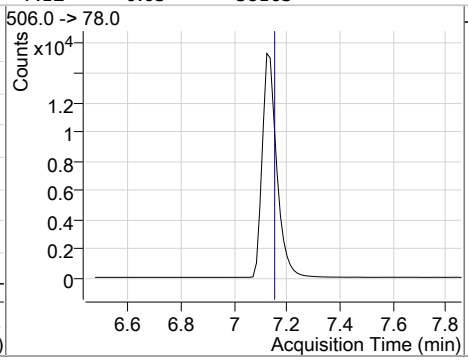


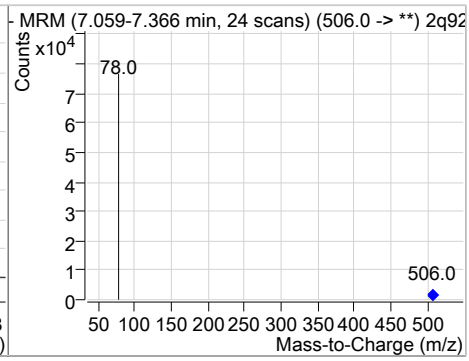




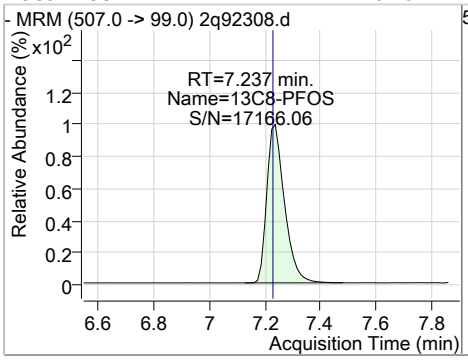
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.80	7.12	-0.03	58163				

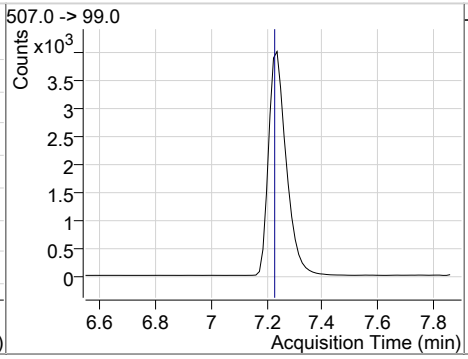


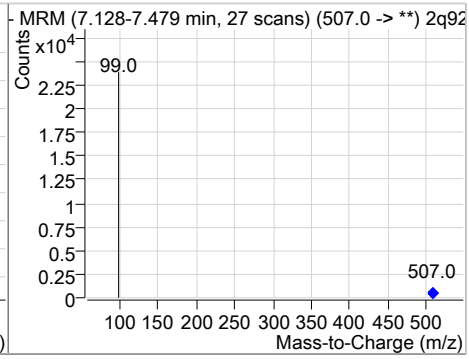




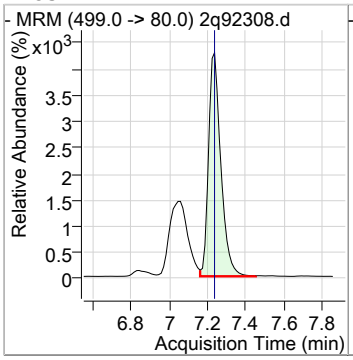
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.76	7.24	0.01	17396				

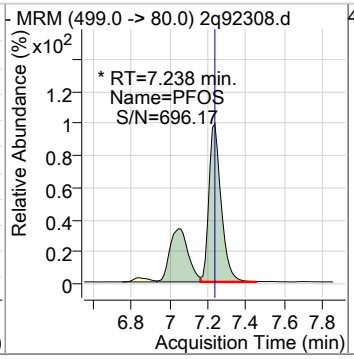


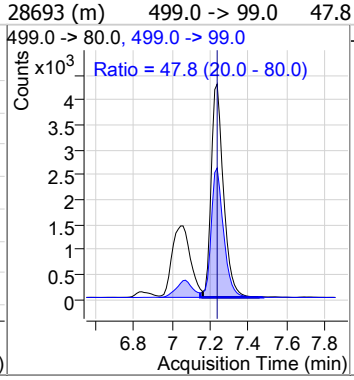


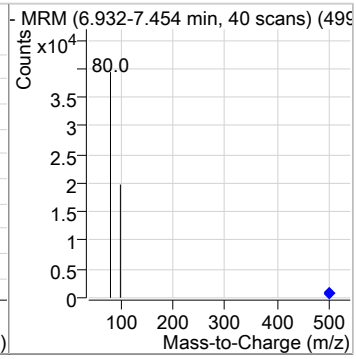


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.84	7.24	0.01	28693 (m)	499.0 -> 99.0	47.8	20.0	80.0



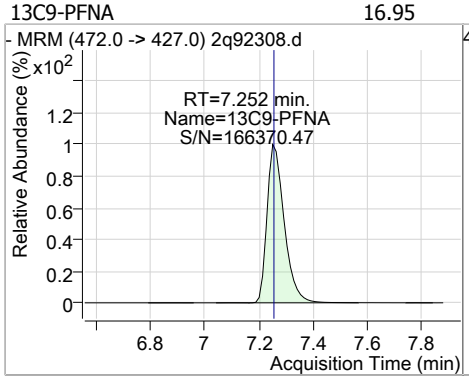


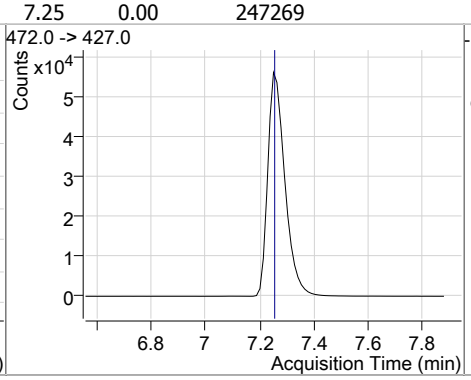


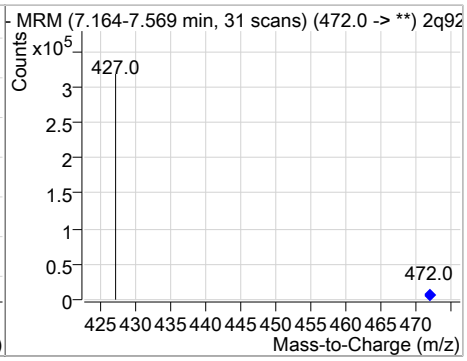


Perfluorinated Compounds by LC/MS/MS

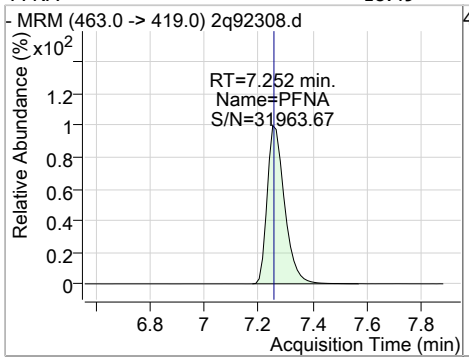
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.95	7.25	0.00	247269				

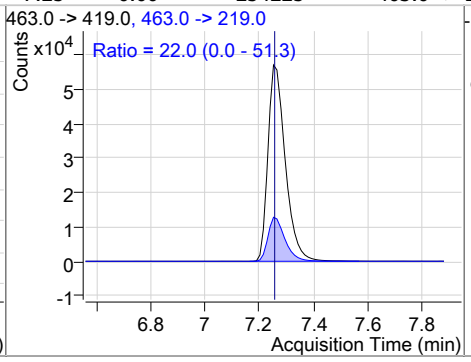


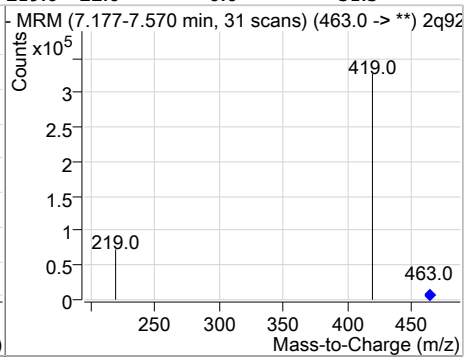




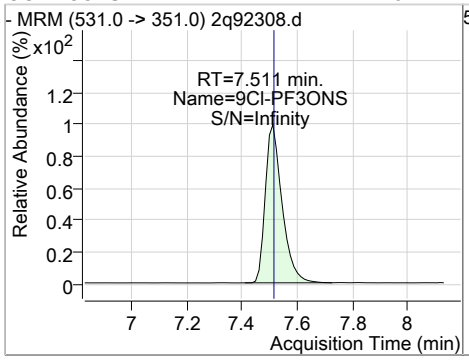
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	18.49	7.25	0.00	254225	463.0 -> 219.0	22.0	0.0	51.3

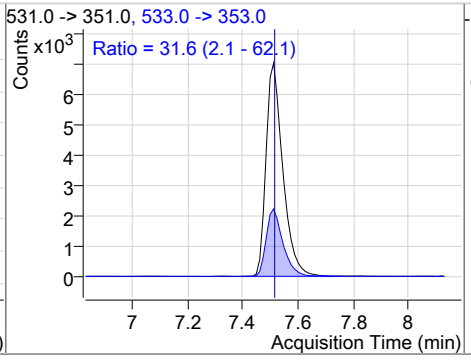


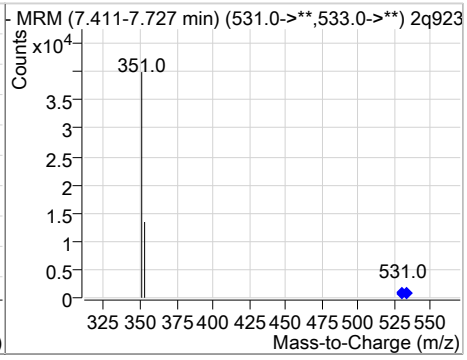




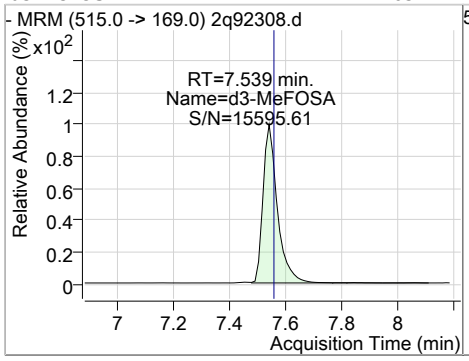
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	17.62	7.51	0.01	29421	533.0 -> 353.0	31.6	2.1	62.1

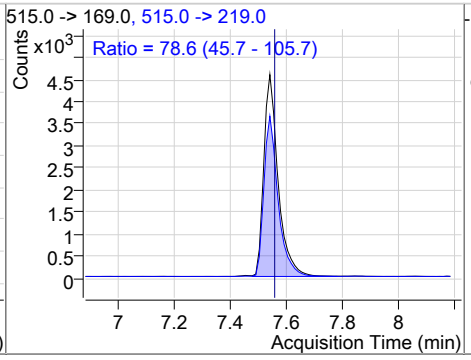


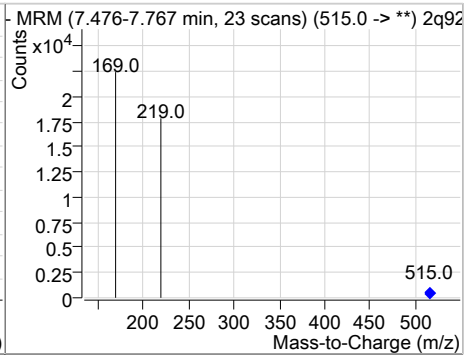




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	11.63	7.54	-0.01	16275	515.0 -> 219.0	78.6	45.7	105.7

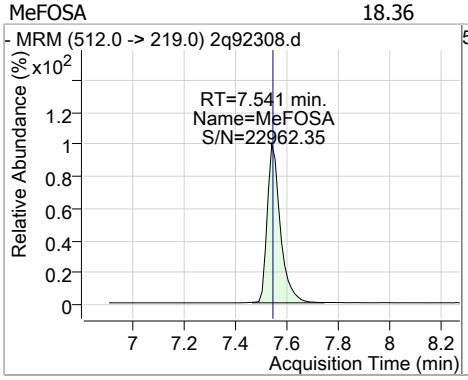


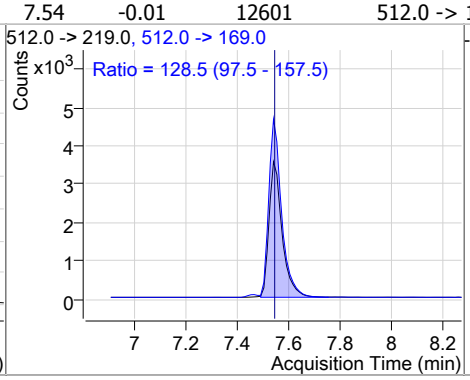


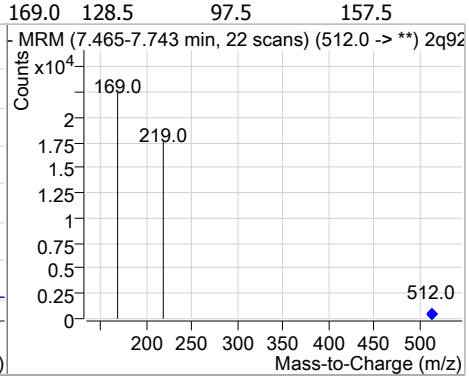


Perfluorinated Compounds by LC/MS/MS

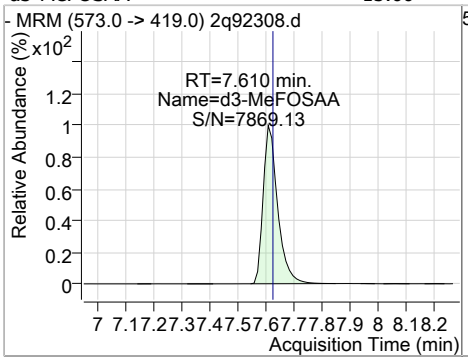
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.36	7.54	-0.01	12601	512.0 -> 169.0	128.5	97.5	157.5

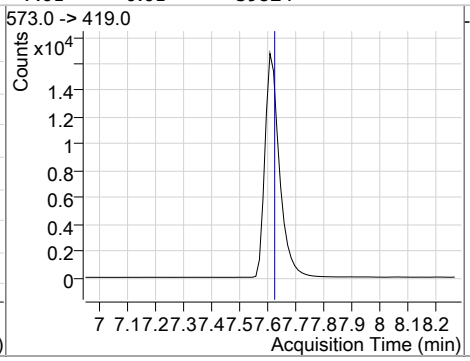


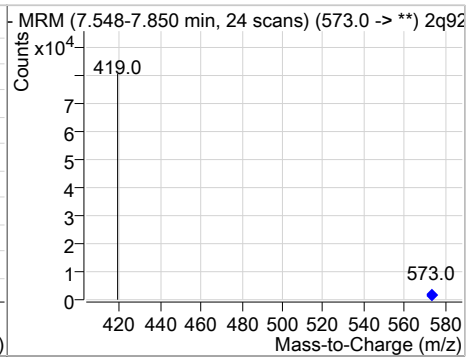




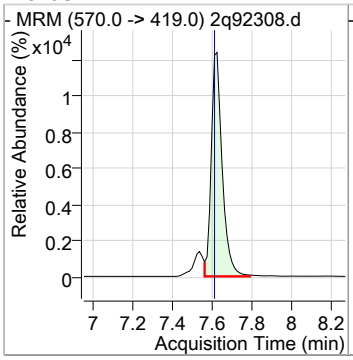
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.60	7.61	-0.01	59824				

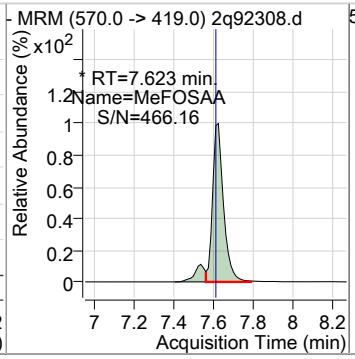


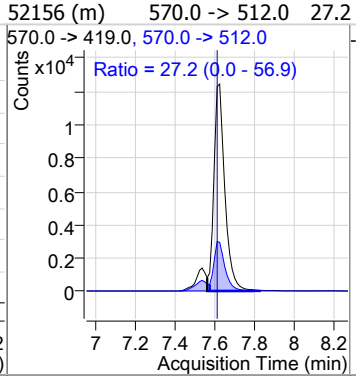


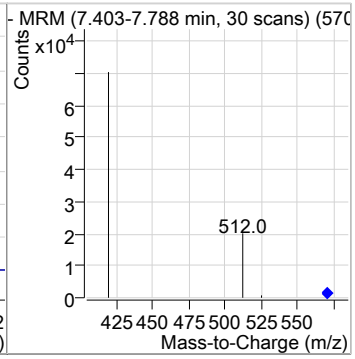


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	18.98	7.62	0.00	52156 (m)	570.0 -> 512.0	27.2	0.0	56.9

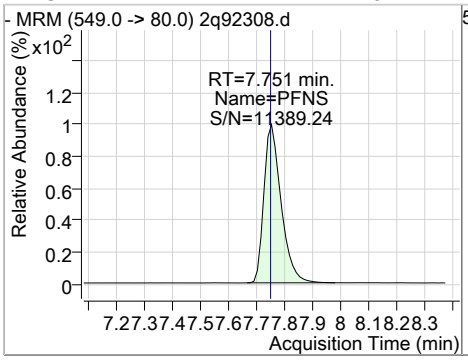


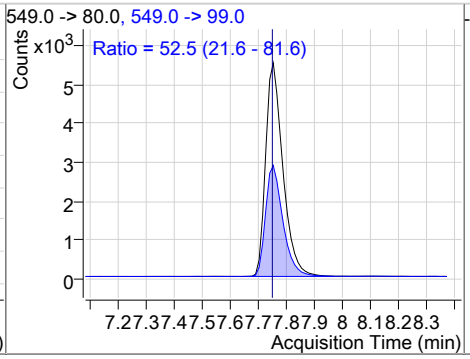


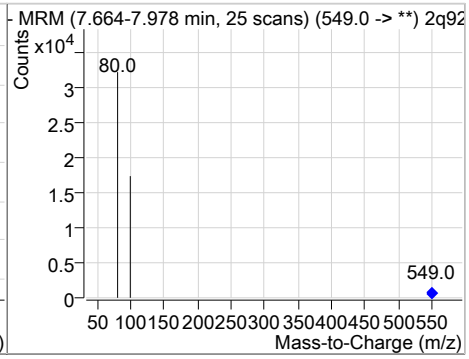




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	19.24	7.75	0.01	23578	549.0 -> 99.0	52.5	21.6	81.6

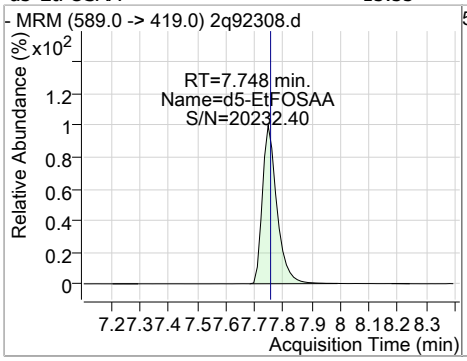


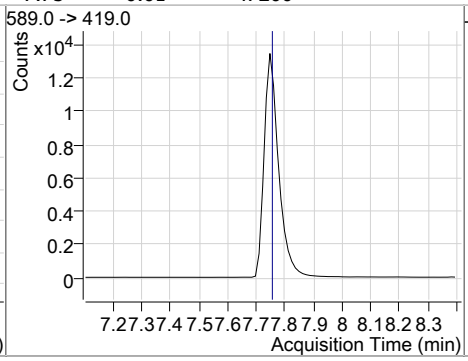


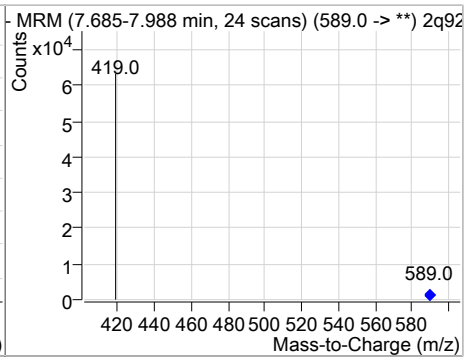


Perfluorinated Compounds by LC/MS/MS

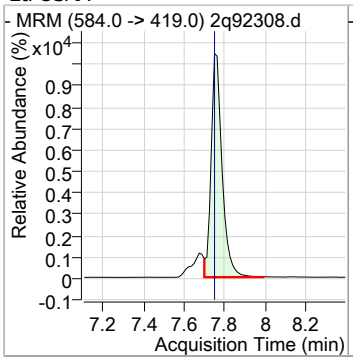
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	15.55	7.75	-0.01	47206				

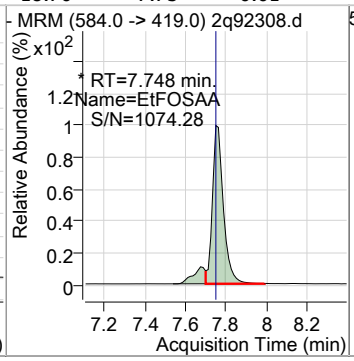


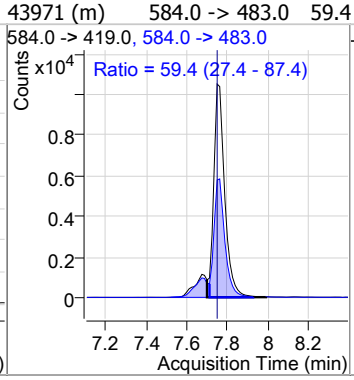


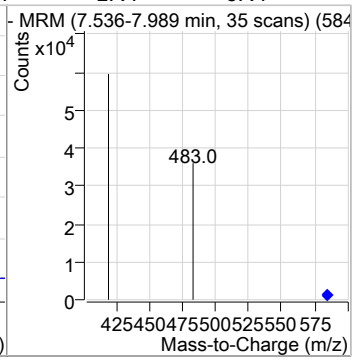


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.70	7.75	-0.01	43971 (m)	584.0 -> 483.0	59.4	27.4	87.4

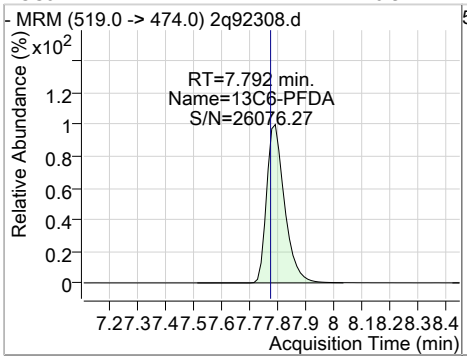


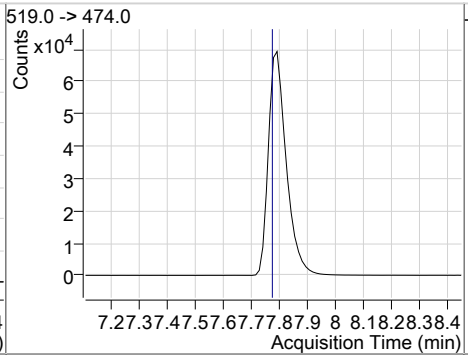


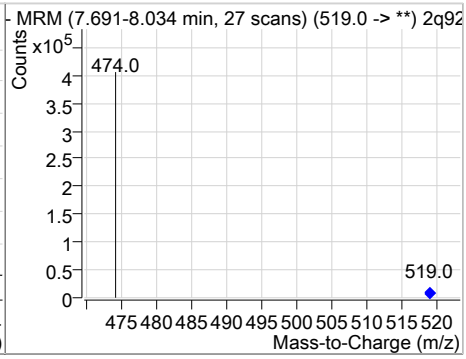




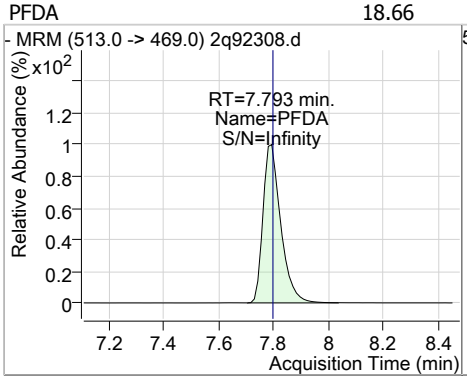
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.91	7.79	0.01	308092				

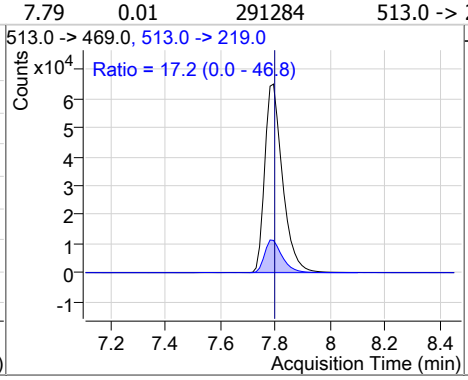


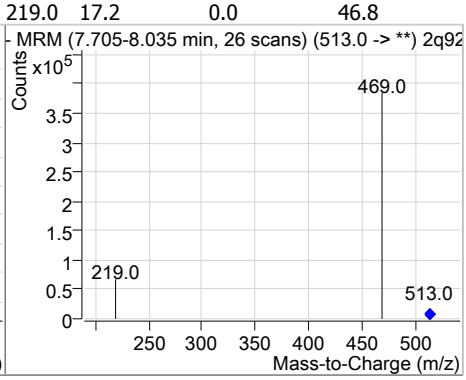




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	18.66	7.79	0.01	291284	513.0 -> 219.0	17.2	0.0	46.8

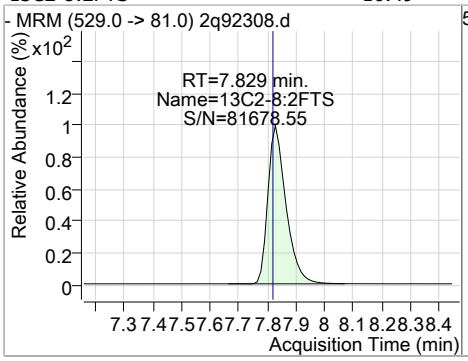


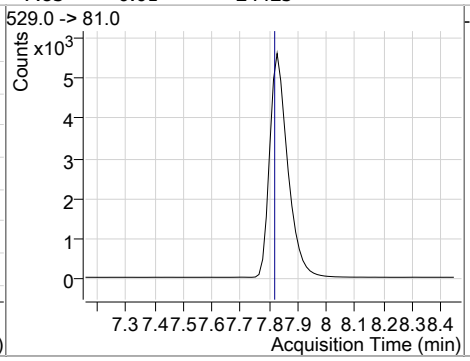


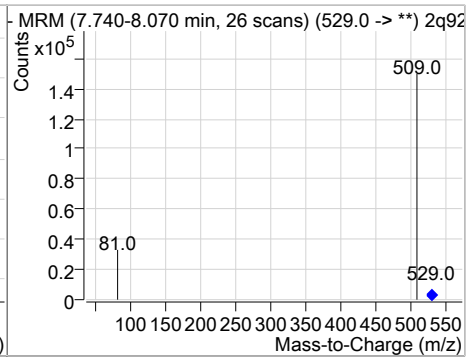


Perfluorinated Compounds by LC/MS/MS

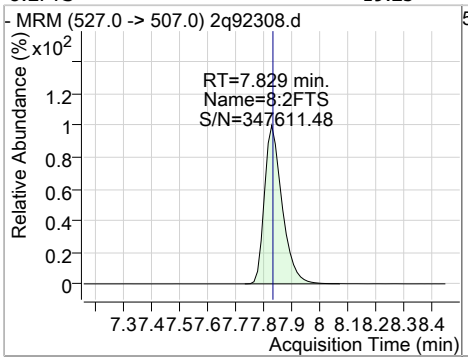
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.49	7.83	0.01	24425				

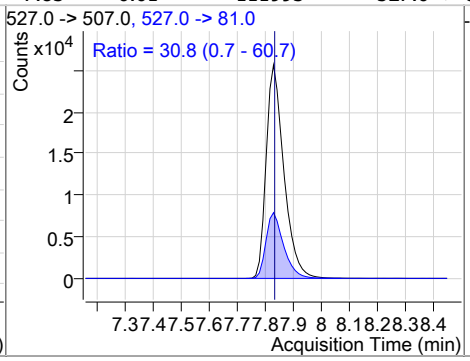


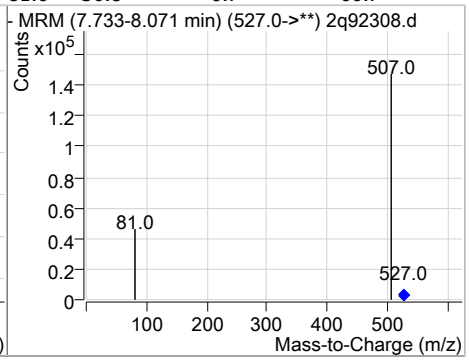




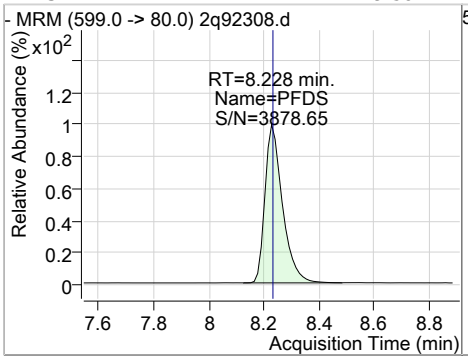
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.25	7.83	0.01	111993	527.0 -> 81.0	30.8	0.7	60.7

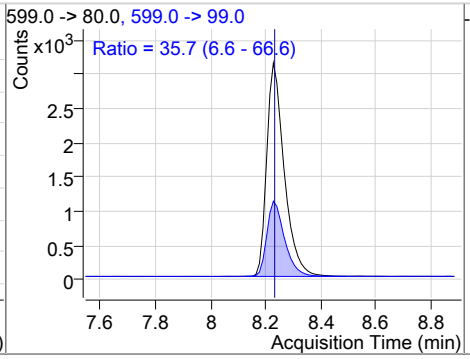


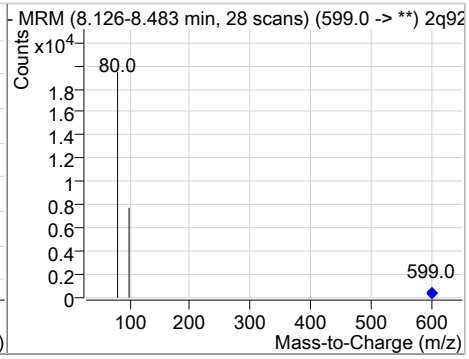




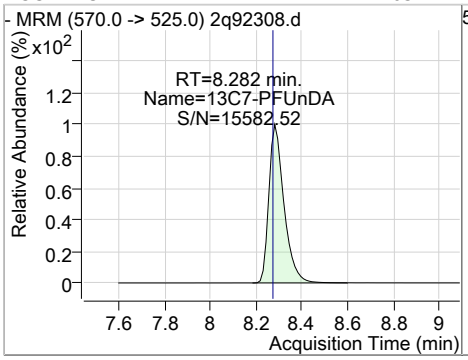
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.58	8.23	0.01	13758	599.0 -> 99.0	35.7	6.6	66.6

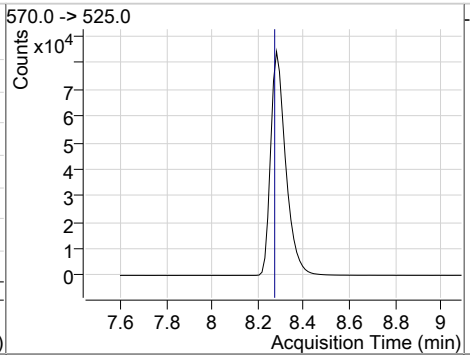


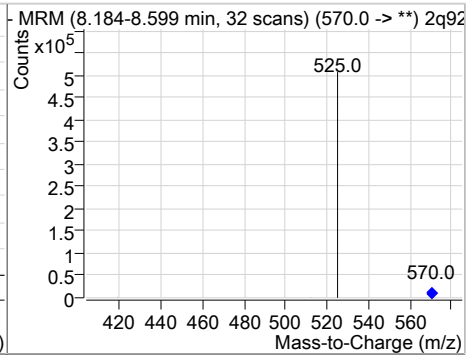




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.03	8.28	0.01	385258				

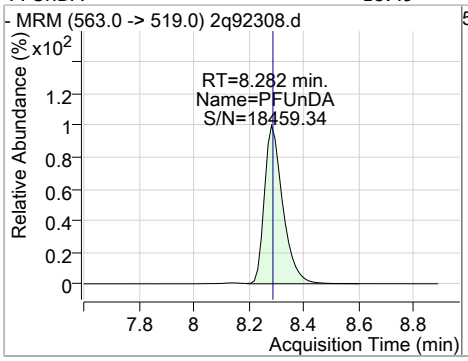


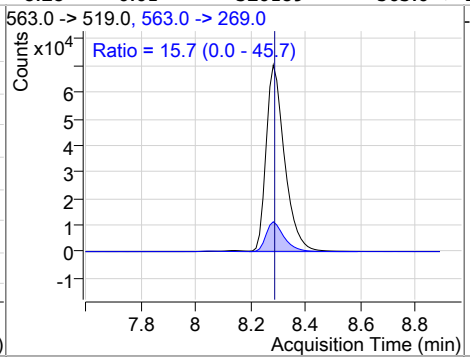


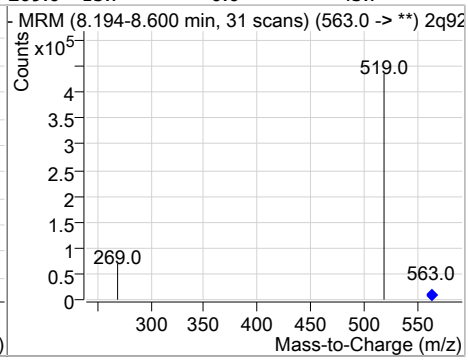


Perfluorinated Compounds by LC/MS/MS

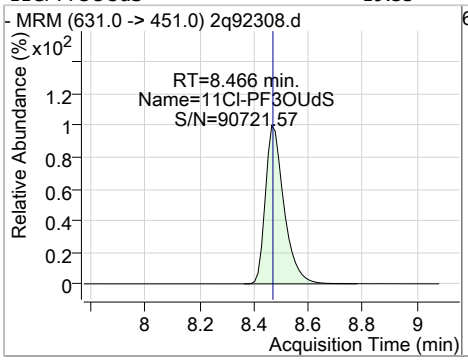
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.49	8.28	0.01	326189	563.0 -> 269.0	15.7	0.0	45.7

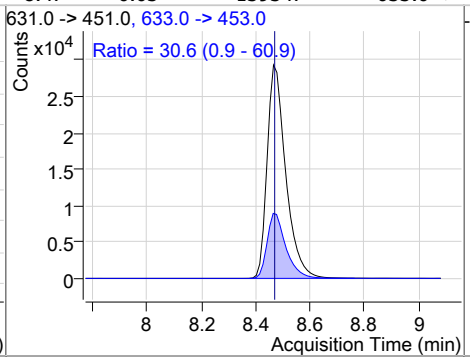


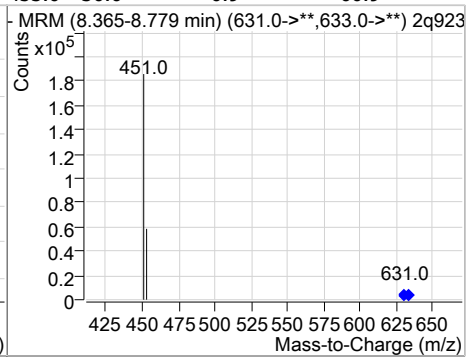




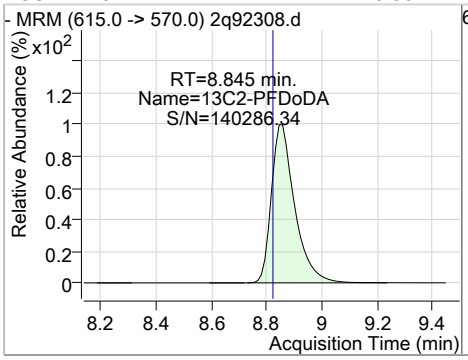
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	19.33	8.47	0.03	139347	633.0 -> 453.0	30.6	0.9	60.9

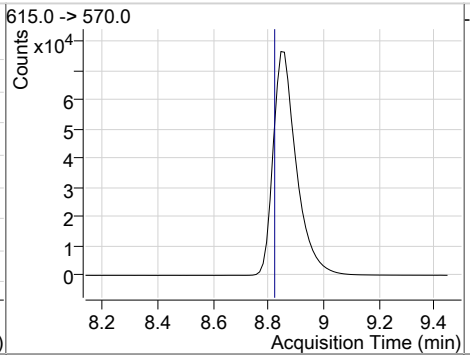


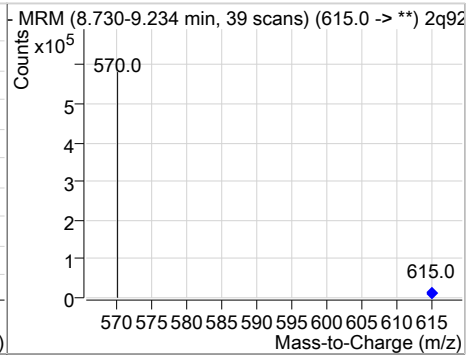




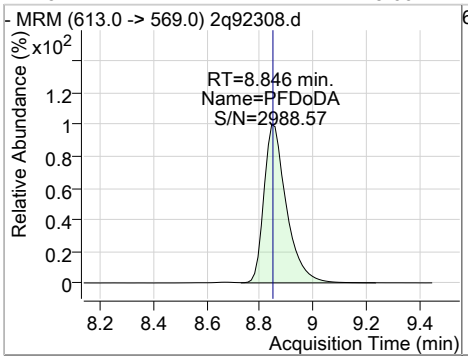
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.56	8.84	0.03	447246				

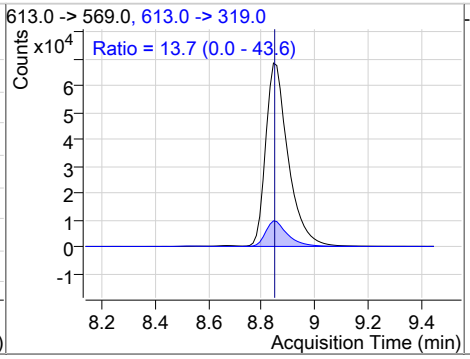


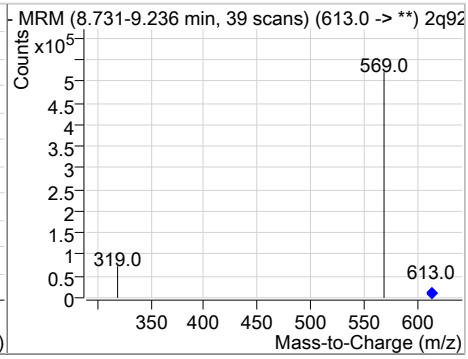




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	18.66	8.85	0.03	400414	613.0 -> 319.0	13.7	0.0	43.6

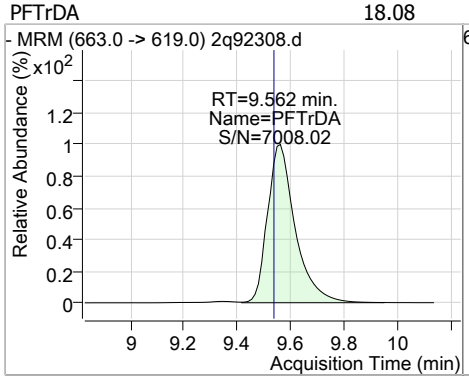


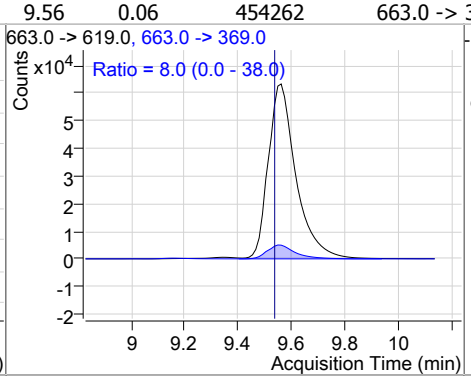


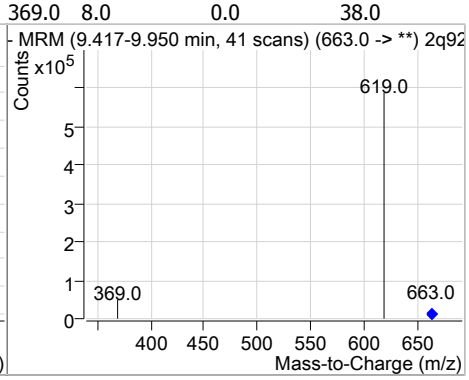


Perfluorinated Compounds by LC/MS/MS

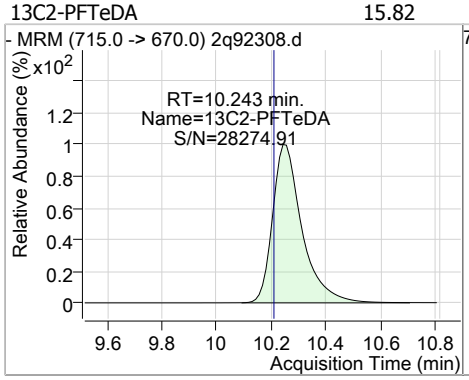
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	18.08	9.56	0.06	454262	663.0 -> 369.0	8.0	0.0	38.0

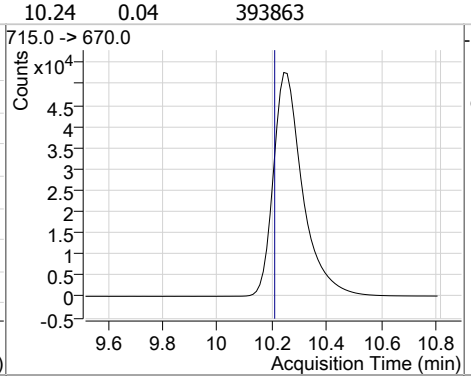


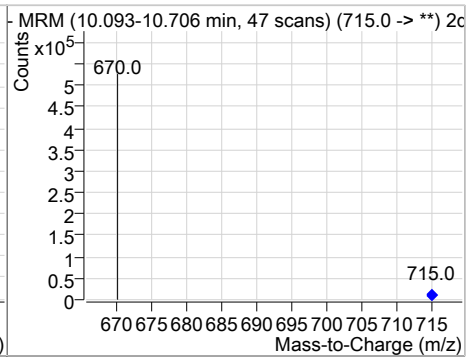




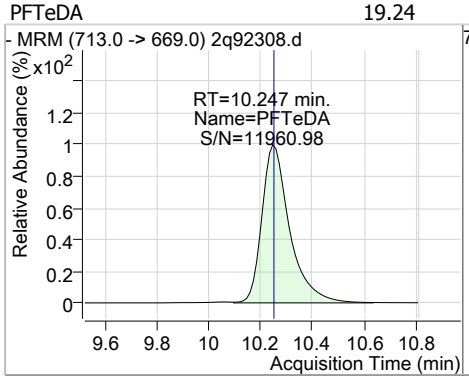
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.82	10.24	0.04	393863				

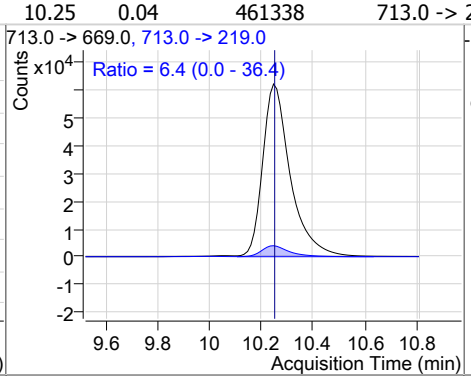


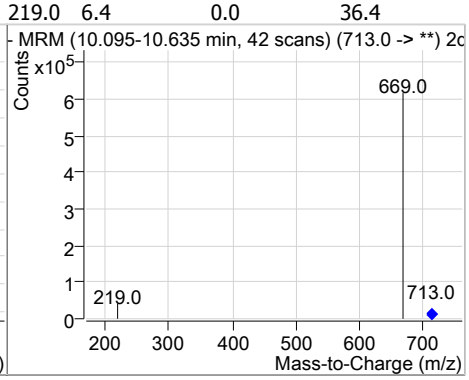




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.24	10.25	0.04	461338	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: OP91428-BS
Lab FileID: 2Q92308.D
Injection Time: 06/02/22 15:50
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:50 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92347.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 1:19:29 PM
Sample Name : op91428-MS
Vial : P1-C5
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91428,S2Q1294,125,,,1.0,5,water

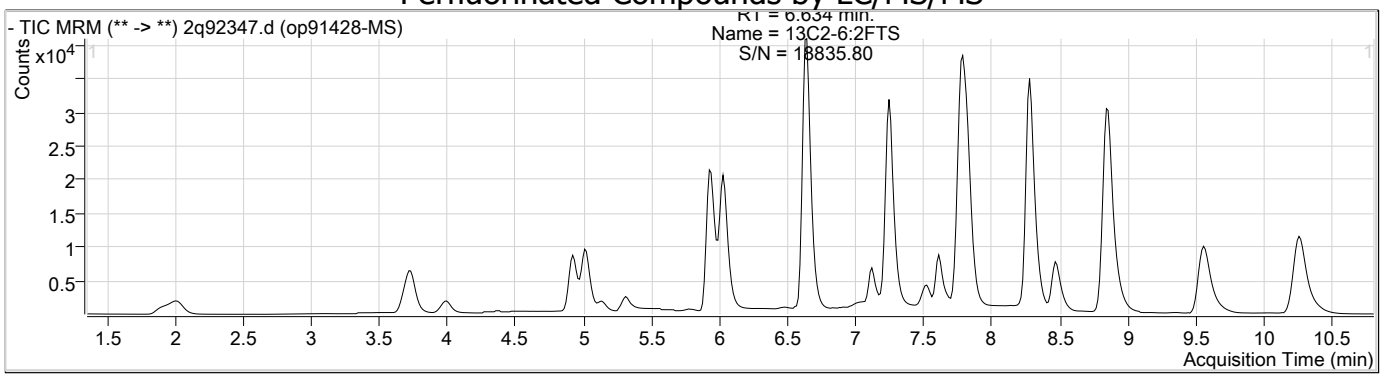
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	10648	20.00	µg/L	-0.013
M4-PFBA	2.002	217.0 -> 172.0	13566	20.00	µg/L	-0.013
M5-PFPeA	3.724	268.0 -> 223.0	14993	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	22140	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	32549	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	45297	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	49446	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	62895	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	78438	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	87620	20.00	µg/L	0.027
M2-PFTeDA	10.255	715.0 -> 670.0	40107	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	9315	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	1810	20.00	µg/L	-0.013
M3-PFHxS	5.967	402.0 -> 99.0	2692	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	3745	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	1681	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	4009	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	5165	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	12695	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	999	20.00	µg/L	-0.013
M3-MeFOSA	7.527	515.0 -> 169.0	1074	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	1681	3.61	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.1%		
13C2-6:2FTS	6.634	429.0 -> 81.0	4009	3.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 19.4%		
13C2-8:2FTS	7.828	529.0 -> 81.0	5165	3.49	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.4%		
13C2-PFDoDA	8.845	615.0 -> 570.0	87620	3.24	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.2%		
13C2-PFTeDA	10.255	715.0 -> 670.0	40107	1.61	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 8.1%		
13C3-PFBS	3.992	302.0 -> 99.0	1810	3.56	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.8%		
13C3-PFHxS	5.967	402.0 -> 99.0	2692	3.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.9%		
13C4-PFBA	2.002	217.0 -> 172.0	13566	3.51	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.6%		
13C4-PFHpA	5.929	367.0 -> 322.0	32549	3.51	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.5%		
d5-EtFOSAA	7.748	589.0 -> 419.0	10648	3.51	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.5%		
13C5-PFHxA	5.014	318.0 -> 273.0	22140	3.28	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.4%		
13C5-PFPeA	3.724	268.0 -> 223.0	14993	3.29	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

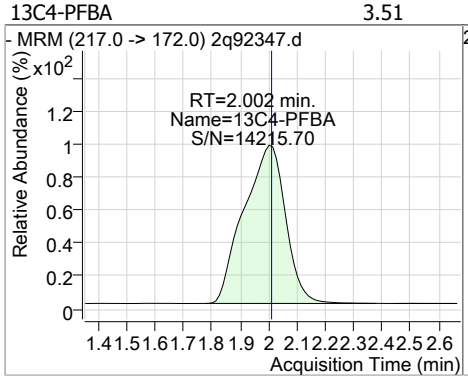
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.4%			
13C6-PFDA	7.779	519.0 -> 474.0	62895	3.45	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.3%			
13C7-PFUnDA	8.282	570.0 -> 525.0	78438	3.47	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.3%			
13C8-FOSA	7.124	506.0 -> 78.0	9315	2.53	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 12.7%			
13C8-PFOA	6.649	421.0 -> 376.0	45297	3.52	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.6%			
13C8-PFOS	7.225	507.0 -> 99.0	3745	3.61	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 18.0%			
13C9-PFNA	7.252	472.0 -> 427.0	49446	3.39	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 17.0%			
d3-MeFOSAA	7.610	573.0 -> 419.0	12695	3.31	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 16.6%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	999	3.84	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 19.2%			
d3-MeFOSA	7.527	515.0 -> 169.0	1074	0.77	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 3.8%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	15604	3.54	µg/L		97
6:2FTS	6.635	427.0 -> 407.0	25927	3.51	µg/L		100
8:2FTS	7.829	527.0 -> 507.0	22885	3.72	µg/L		100
EtFOSAA	7.748	584.0 -> 419.0	9845	3.71	µg/L	m	97
FOSA	7.125	498.0 -> 78.0	9029	3.69	µg/L		100
MeFOSAA	7.611	570.0 -> 419.0	11321	3.88	µg/L	m	100
PFBA	2.008	213.0 -> 169.0	6620	3.81	µg/L		100
PFBS	3.994	299.0 -> 80.0	5626	3.73	µg/L		99
PFDA	7.780	513.0 -> 469.0	59412	3.73	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	75534	3.59	µg/L		100
PFDS	8.228	599.0 -> 80.0	2520	3.52	µg/L		98
PFHpA	5.930	363.0 -> 319.0	50799	3.82	µg/L		99
PFHpS	6.645	449.0 -> 80.0	6020	3.81	µg/L		98
PFHxA	5.015	313.0 -> 269.0	16119	3.94	µg/L		97
PFHxS	5.967	399.0 -> 80.0	8432	4.99	µg/L	m	96
PFNA	7.252	463.0 -> 419.0	55682	4.05	µg/L		98
PFNS	7.751	549.0 -> 80.0	4767	3.61	µg/L		97
PFOA	6.649	413.0 -> 369.0	47281	3.84	µg/L		98
PFOS	7.225	499.0 -> 80.0	12223	7.46	µg/L	m	93
PFPeA	3.726	263.0 -> 219.0	22860	3.96	µg/L		100
PFPeS	5.132	349.0 -> 80.0	4130	4.00	µg/L		98
PFTeDA	10.260	713.0 -> 669.0	42523	3.48	µg/L		99
PFTrDA	9.562	663.0 -> 619.0	64652	2.63	µg/L		99
PFUnDA	8.282	563.0 -> 519.0	65610	3.65	µg/L		99
11Cl-PF3OUdS	8.466	631.0 -> 451.0	26625	3.77	µg/L		100
9Cl-PF3ONS	7.511	531.0 -> 351.0	6313	3.70	µg/L		96
ADONA	6.032	377.0 -> 251.0	61457	3.61	µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	6590	3.66	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	866	3.82	µg/L		84

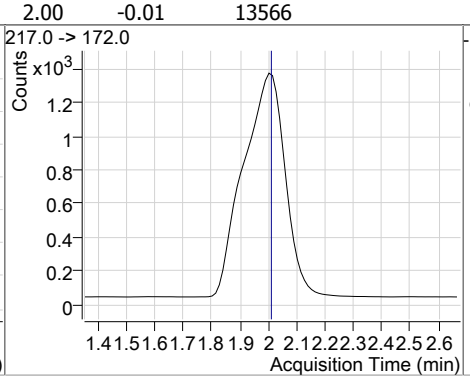
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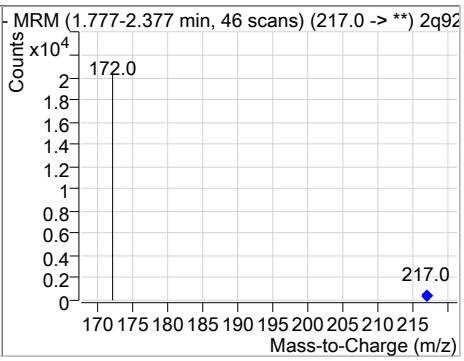
Perfluorinated Compounds by LC/MS/MS



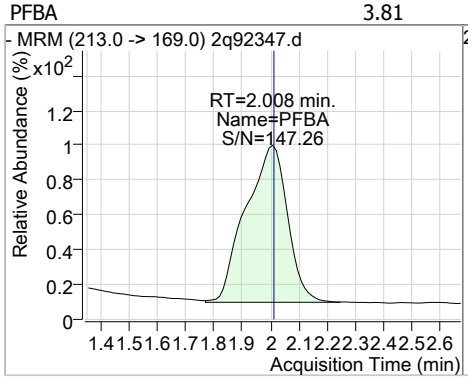
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	3.51	2.00	-0.01	13566				

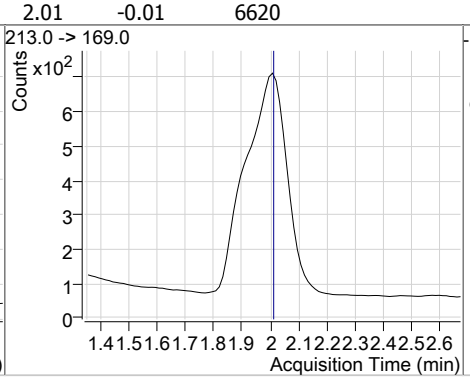


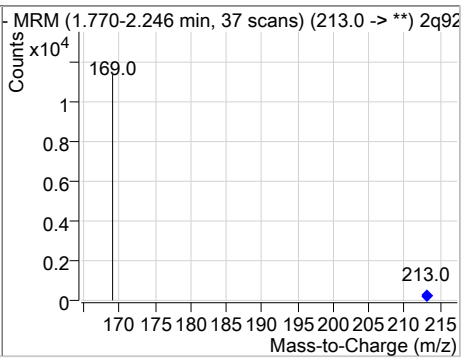




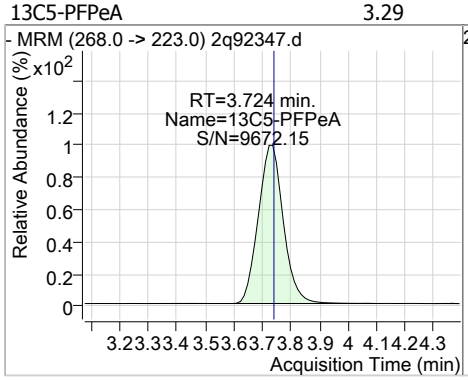
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	3.81	2.01	-0.01	6620				

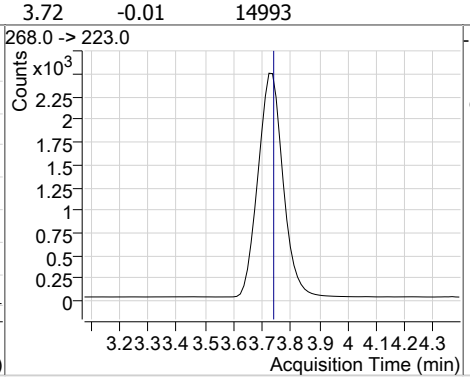


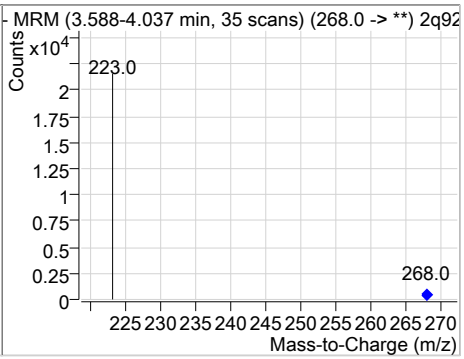




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	3.29	3.72	-0.01	14993				

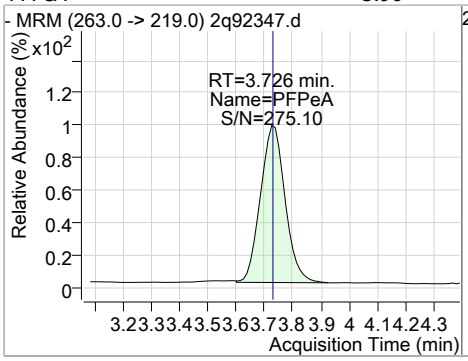


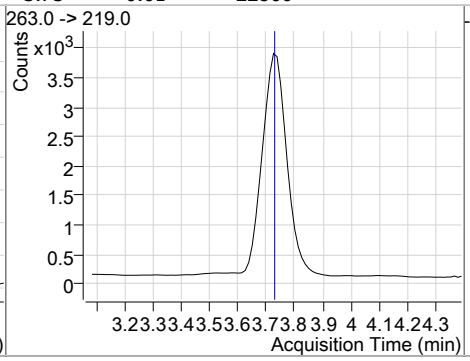


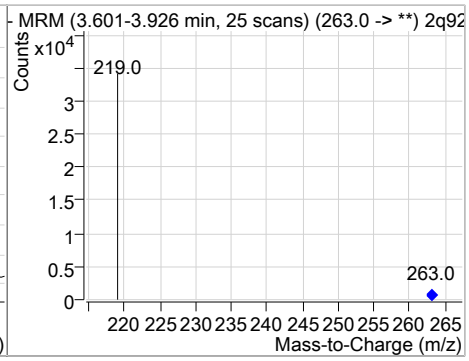


Perfluorinated Compounds by LC/MS/MS

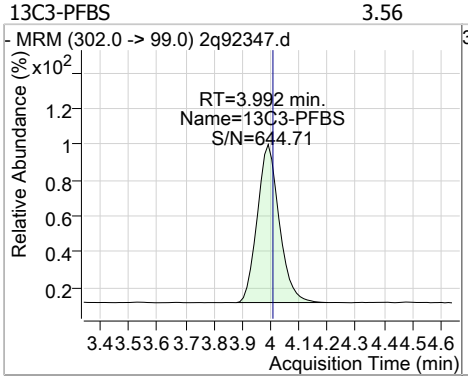
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	3.96	3.73	-0.01	22860				

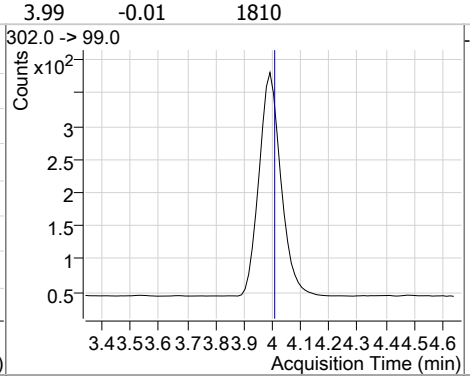


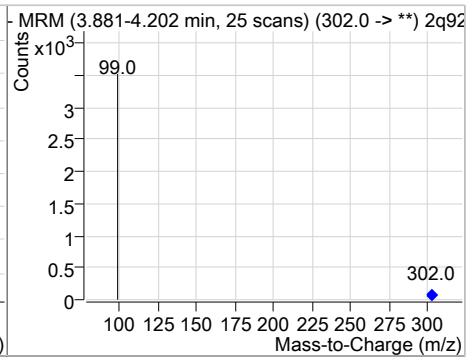




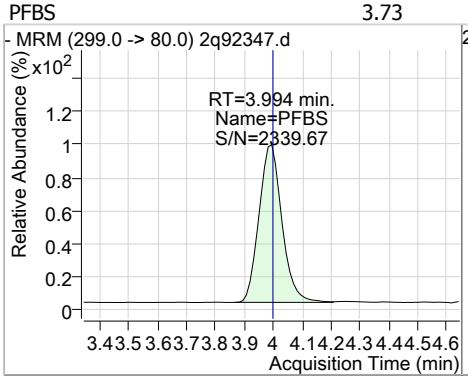
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	3.56	3.99	-0.01	1810				

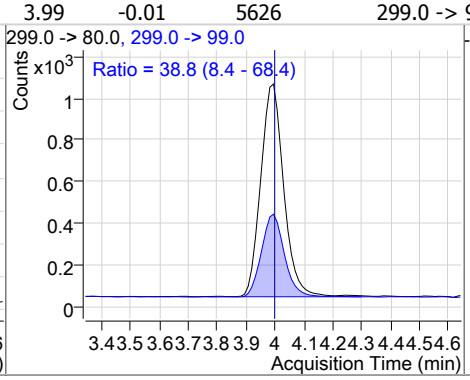


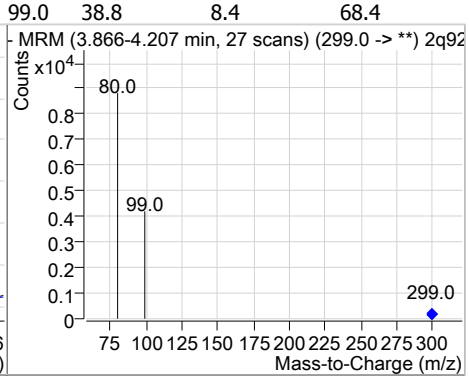




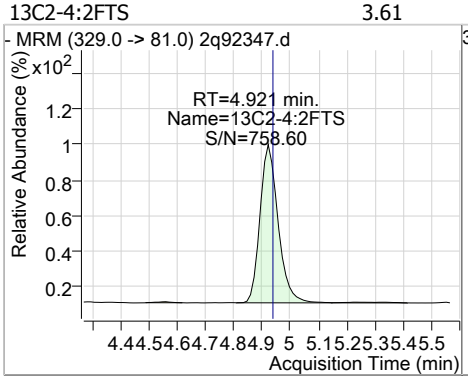
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	3.73	3.99	-0.01	5626	299.0 -> 99.0	38.8	8.4	68.4

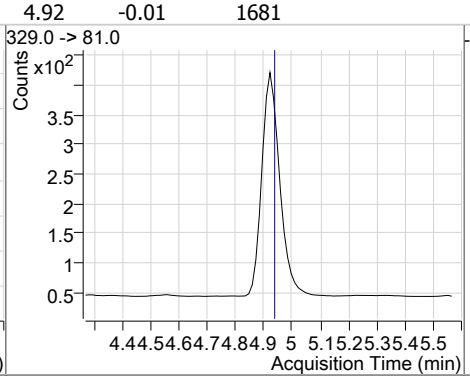


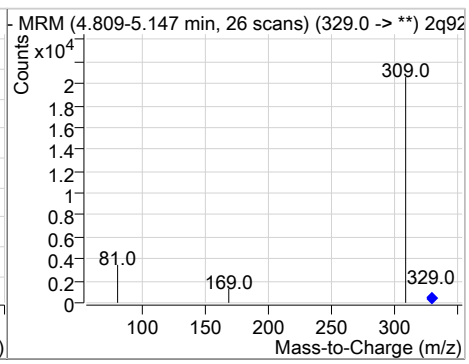




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	3.61	4.92	-0.01	1681				

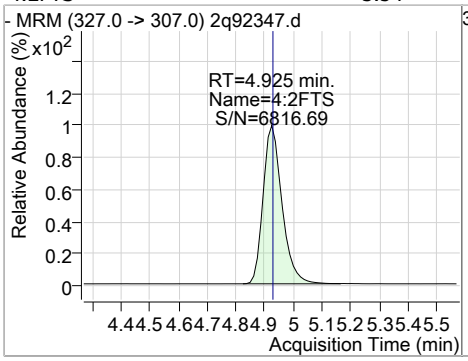


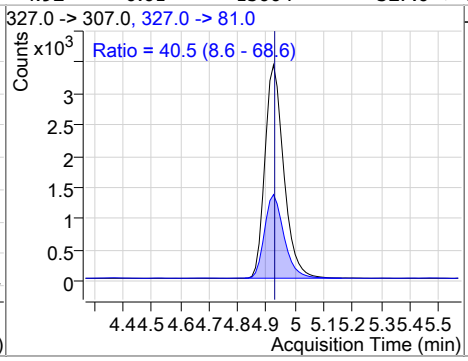


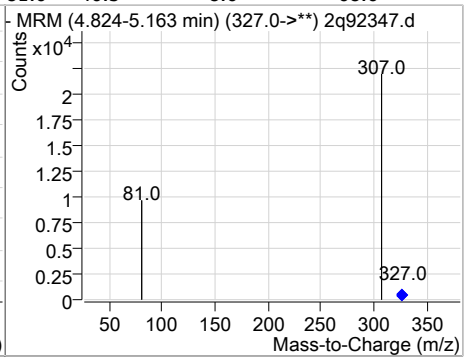


Perfluorinated Compounds by LC/MS/MS

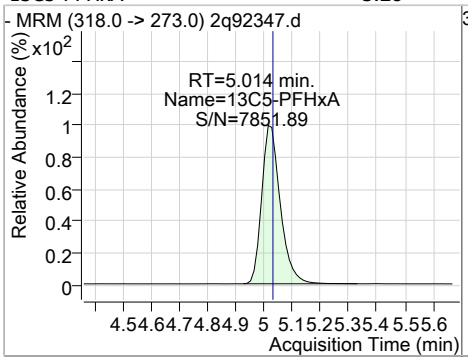
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	3.54	4.92	-0.01	15604	327.0 -> 81.0	40.5	8.6	68.6

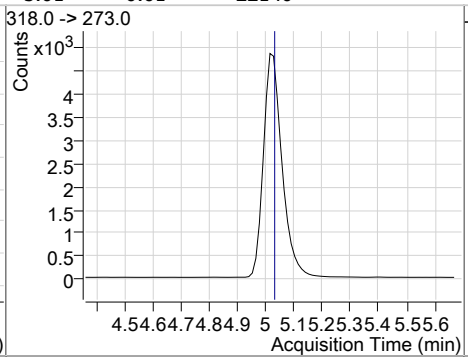


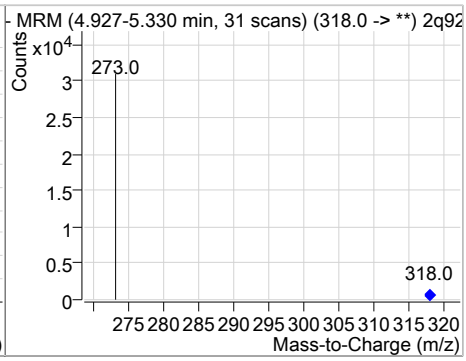




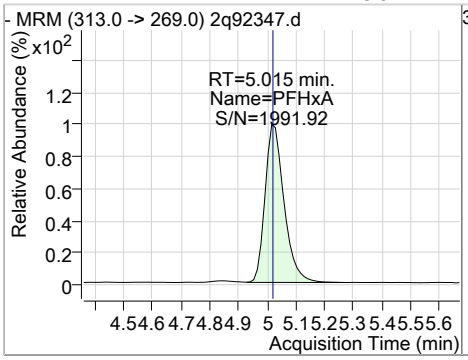
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	3.28	5.01	-0.01	22140				

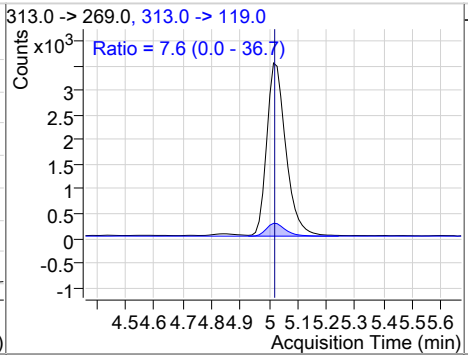


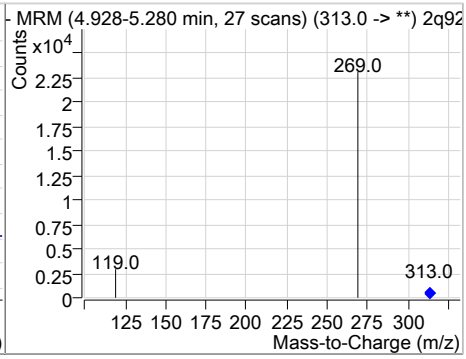




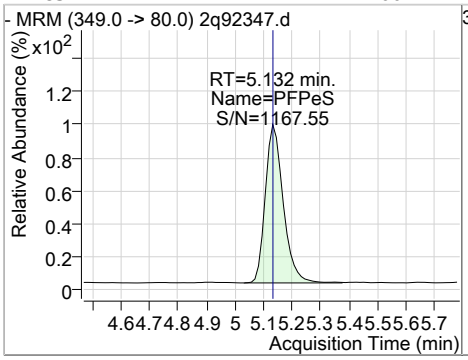
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	3.94	5.02	-0.01	16119	313.0 -> 119.0	7.6	0.0	36.7

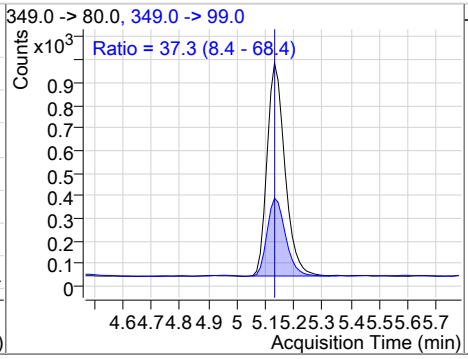


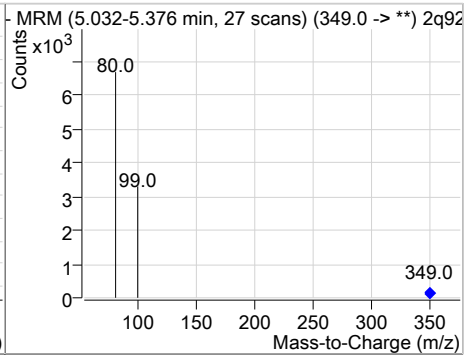




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	4.00	5.13	-0.01	4130	349.0 -> 99.0	37.3	8.4	68.4

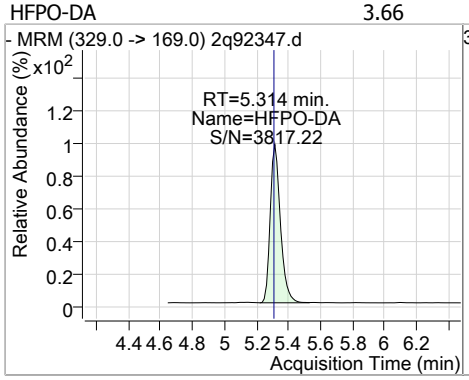


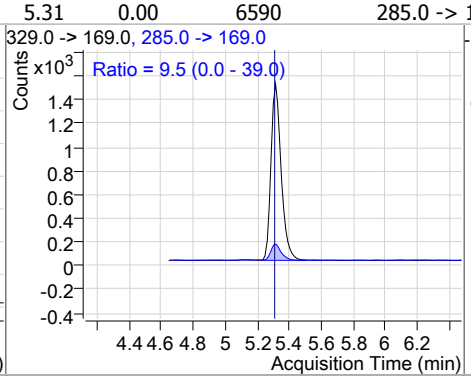


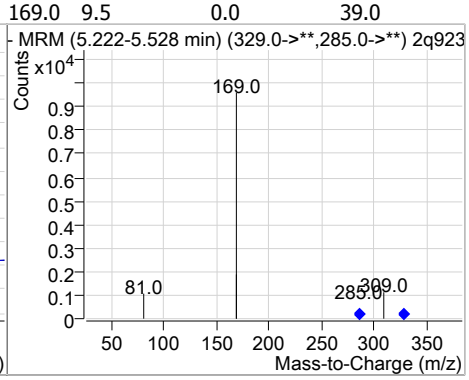


Perfluorinated Compounds by LC/MS/MS

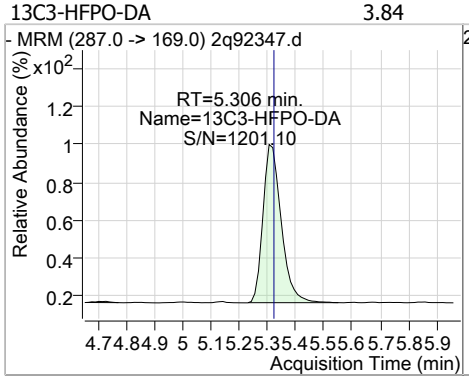
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	3.66	5.31	0.00	6590	285.0 -> 169.0	9.5	0.0	39.0

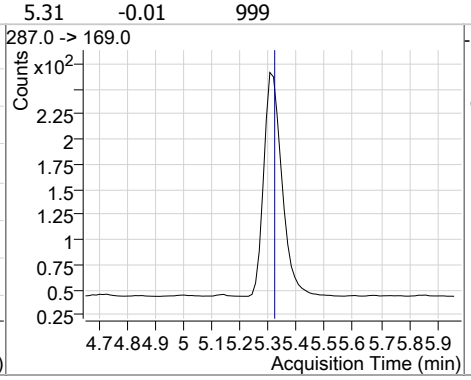


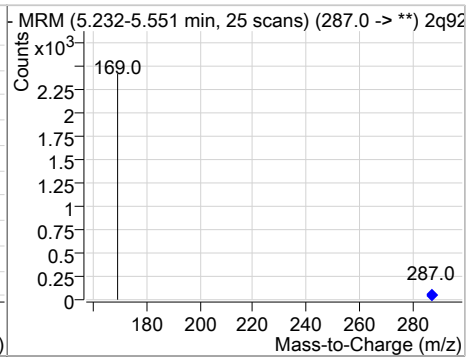




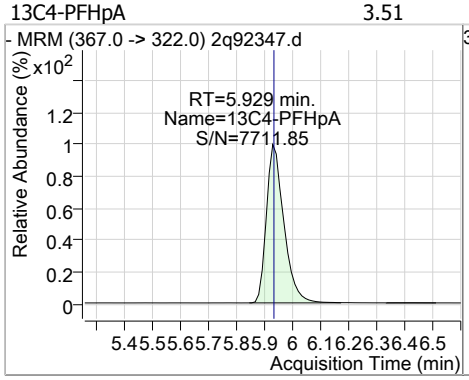
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	3.84	5.31	-0.01	999				

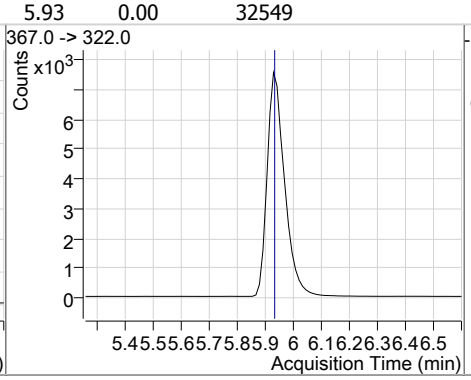


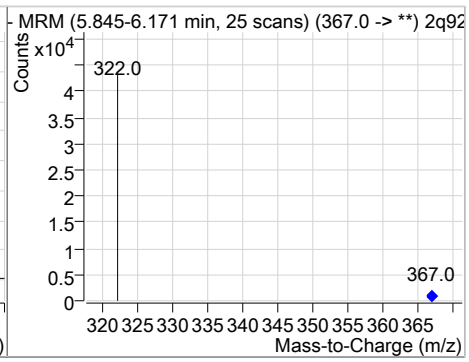




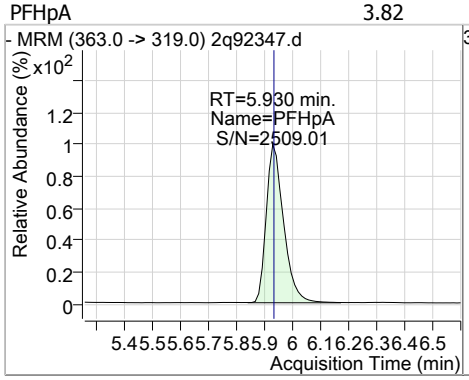
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	3.51	5.93	0.00	32549				

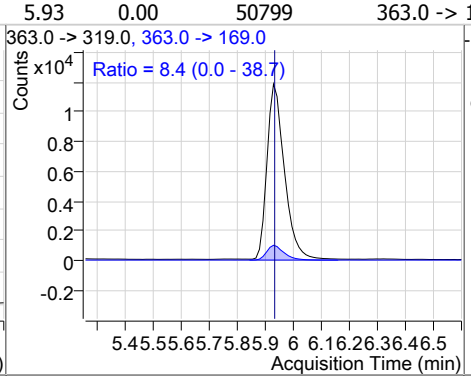


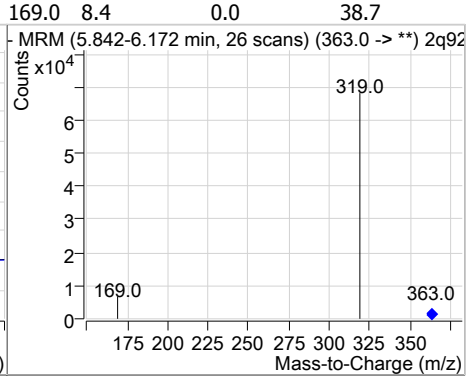




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	3.82	5.93	0.00	50799	363.0 -> 169.0	8.4	0.0	38.7

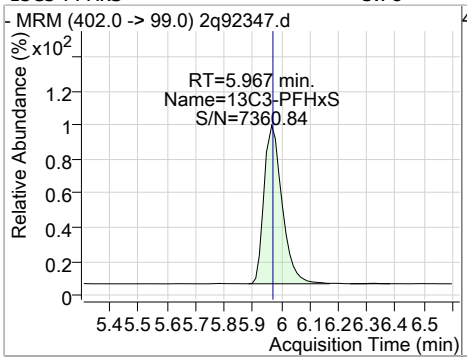


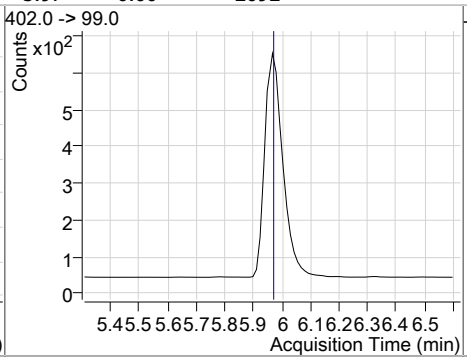


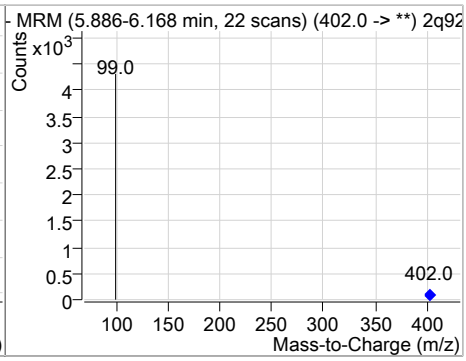


Perfluorinated Compounds by LC/MS/MS

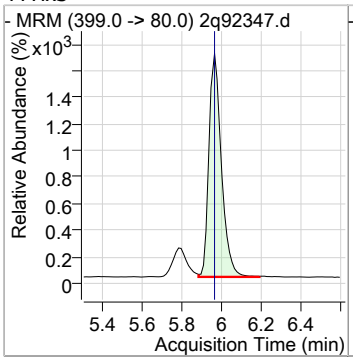
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	3.78	5.97	0.00	2692				

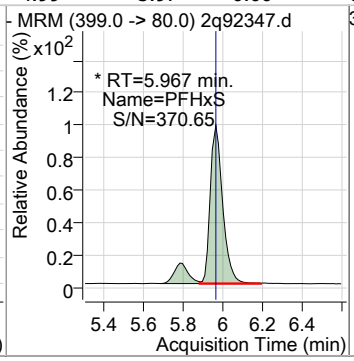


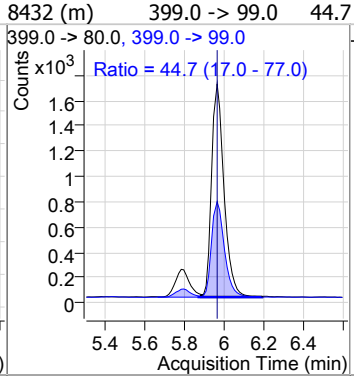


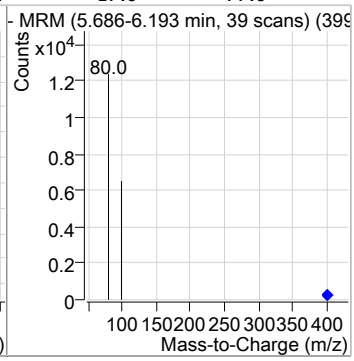


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.99	5.97	0.00	8432 (m)	399.0 -> 99.0	44.7	17.0	77.0

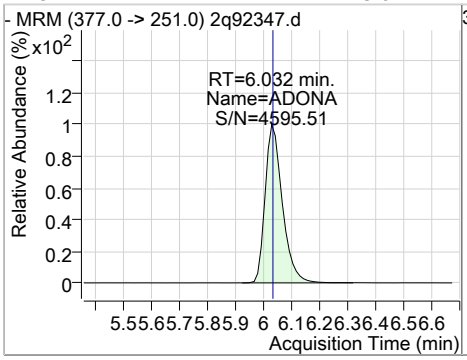


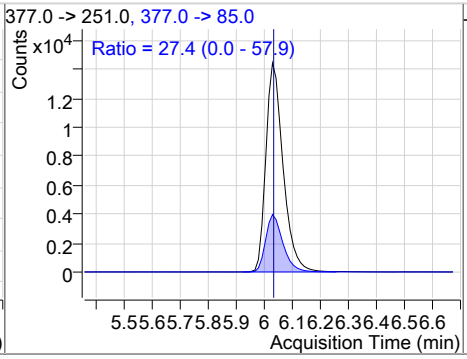


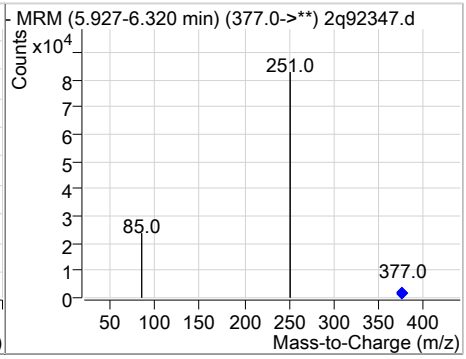




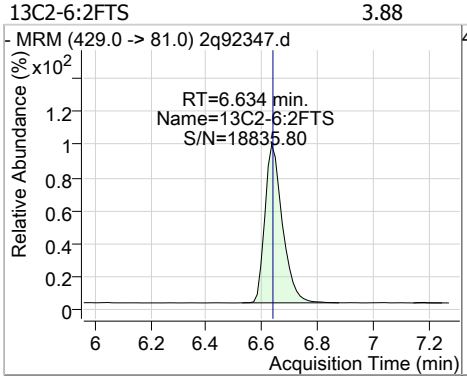
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	3.61	6.03	0.00	61457	377.0 -> 85.0	27.4	0.0	57.9

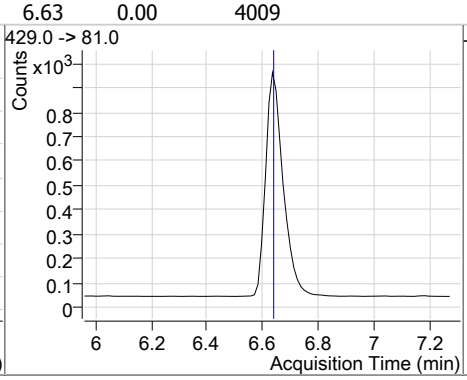


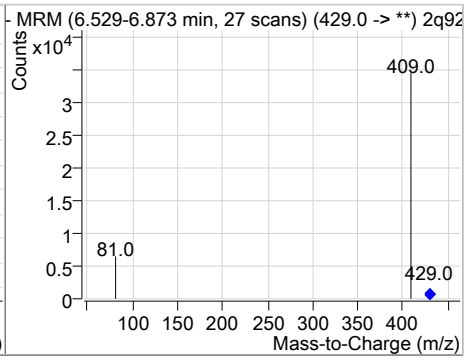




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	3.88	6.63	0.00	4009				

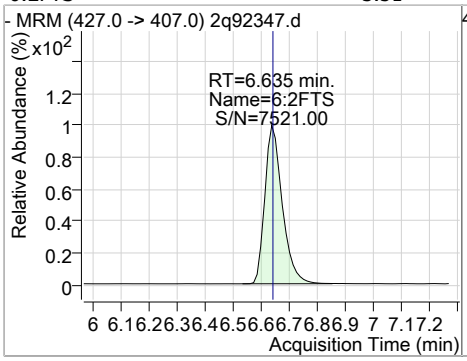


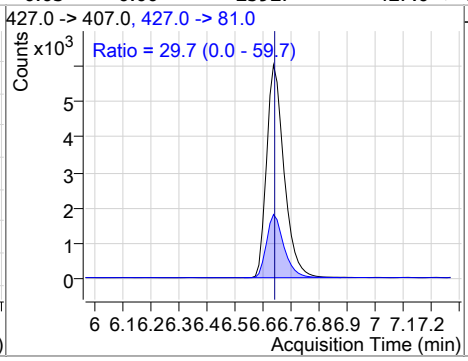


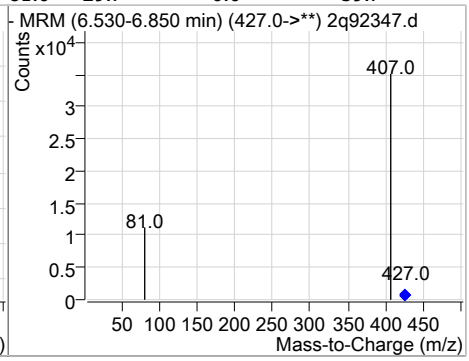


Perfluorinated Compounds by LC/MS/MS

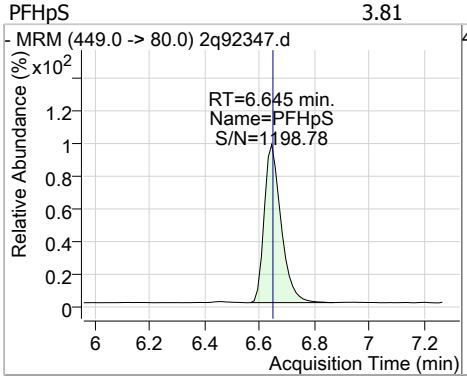
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	3.51	6.63	0.00	25927	427.0 -> 81.0	29.7	0.0	59.7

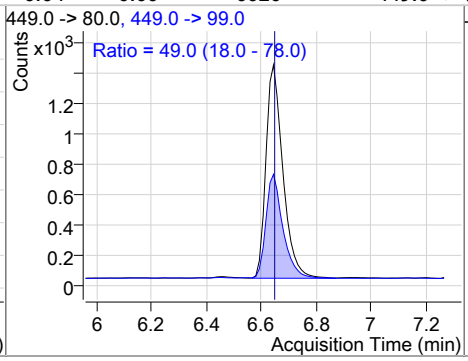


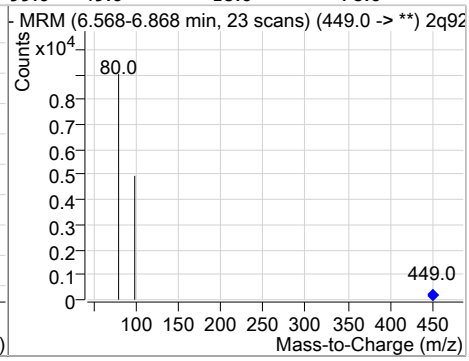




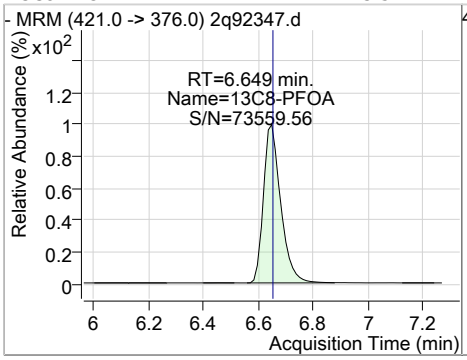
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	3.81	6.64	0.00	6020	449.0 -> 99.0	49.0	18.0	78.0

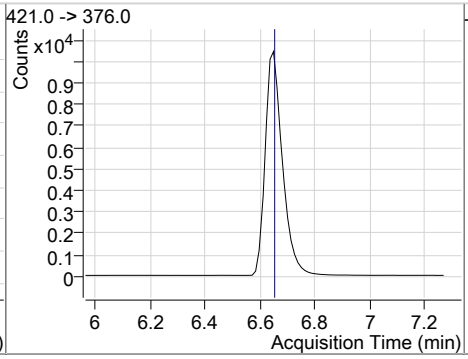


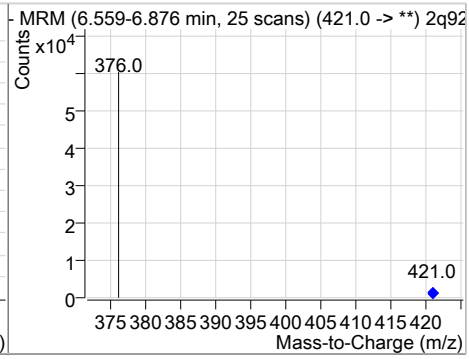




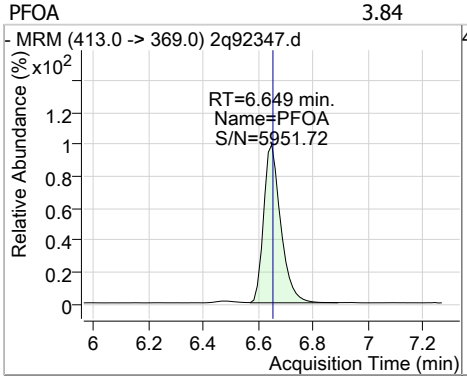
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	3.52	6.65	0.00	45297				

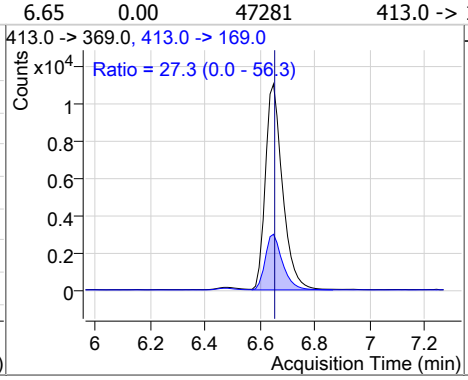


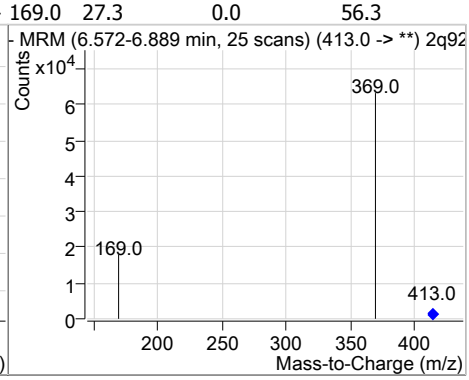




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	3.84	6.65	0.00	47281	413.0 -> 169.0	27.3	0.0	56.3

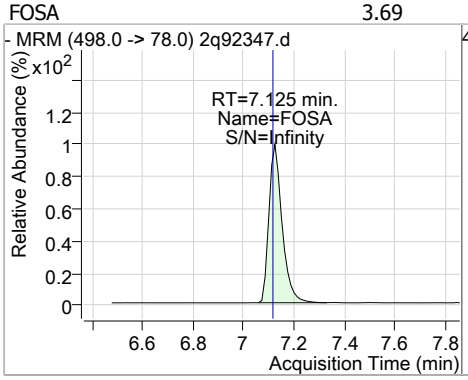


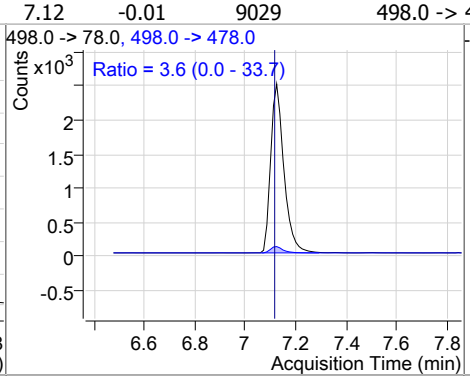


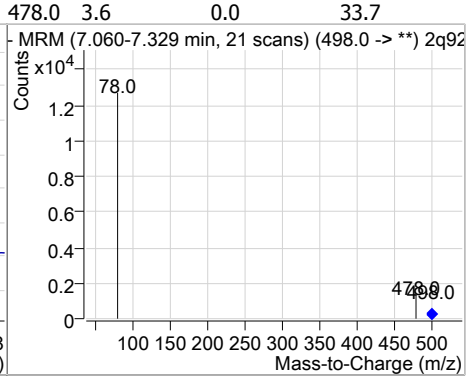


Perfluorinated Compounds by LC/MS/MS

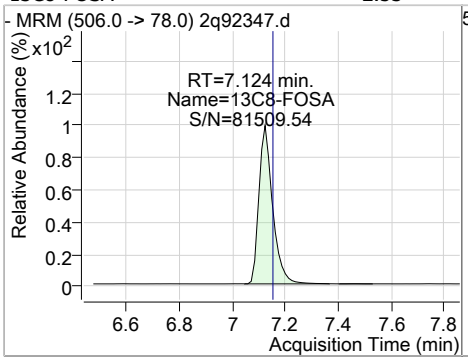
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	3.69	7.12	-0.01	9029	498.0 -> 478.0	3.6	0.0	33.7

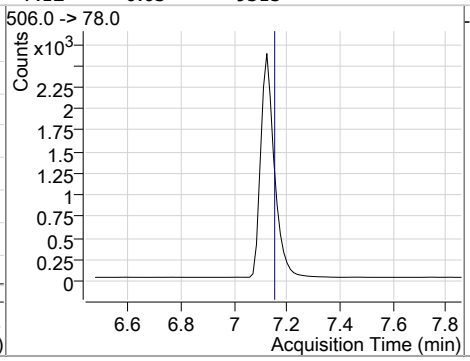


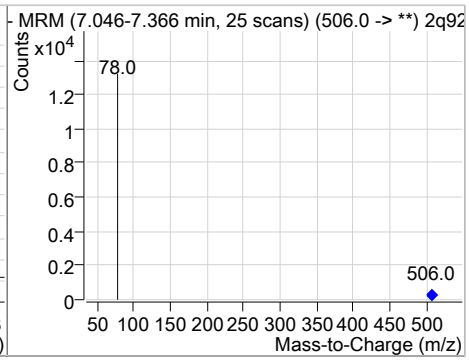




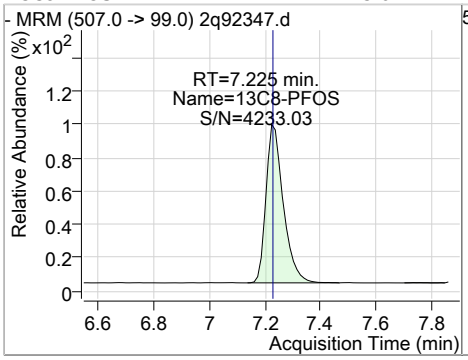
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.53	7.12	-0.03	9315				

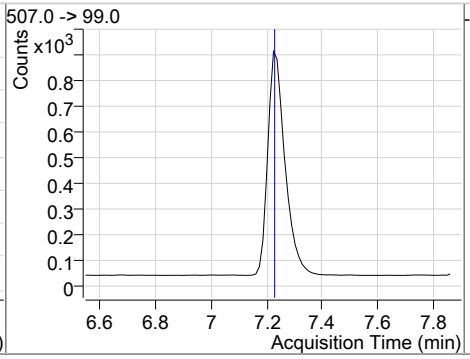


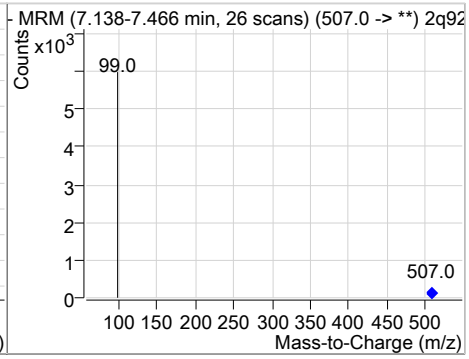




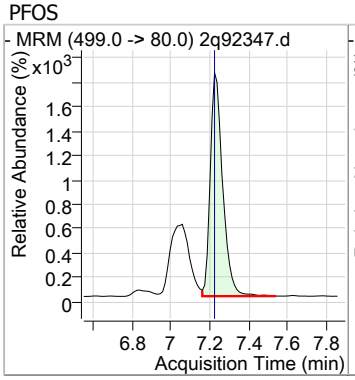
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	3.61	7.22	0.00	3745				

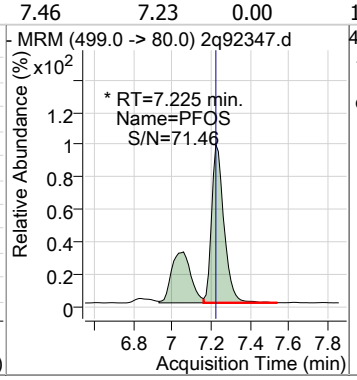


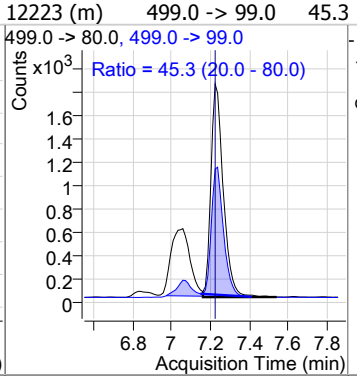


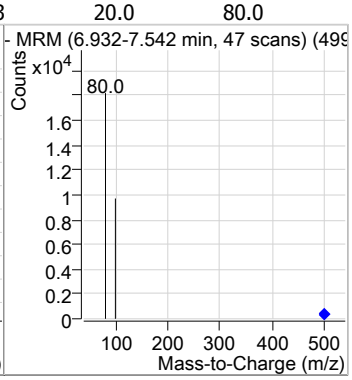


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	7.46	7.23	0.00	12223 (m)	499.0 -> 99.0	45.3	20.0	80.0



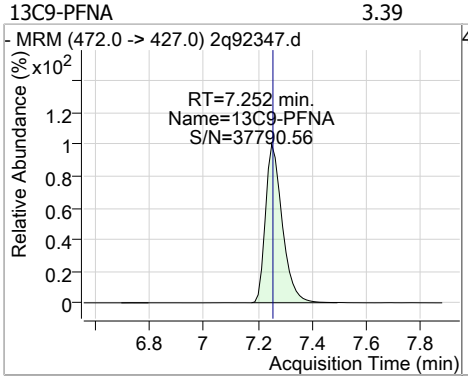


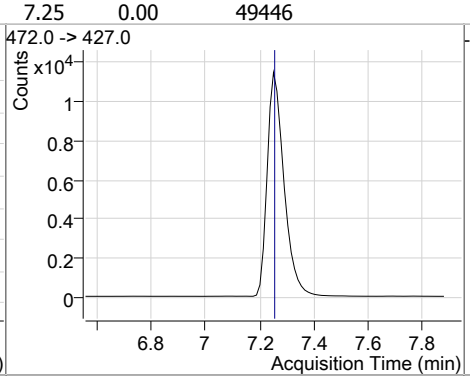


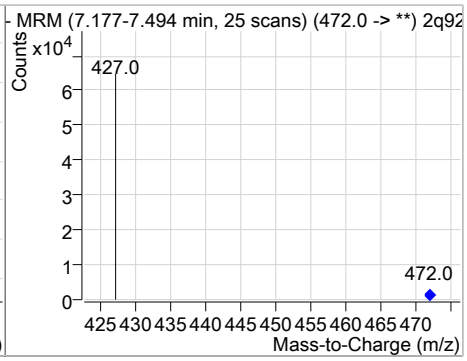


Perfluorinated Compounds by LC/MS/MS

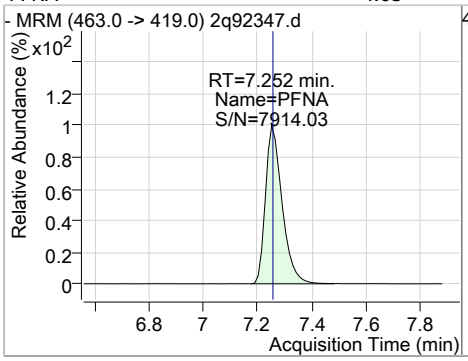
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	3.39	7.25	0.00	49446				

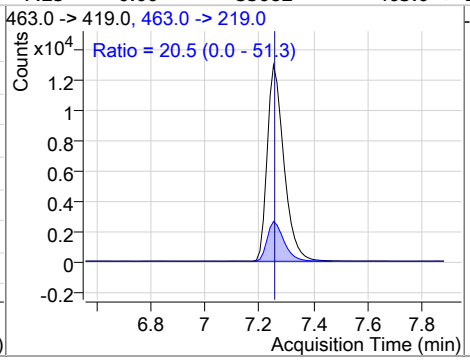


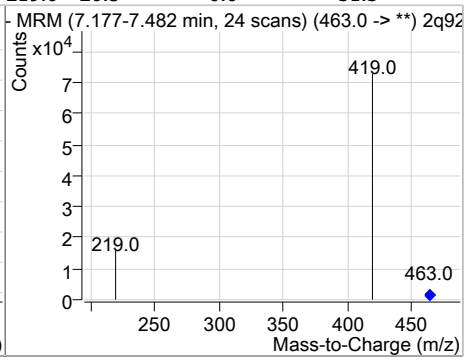




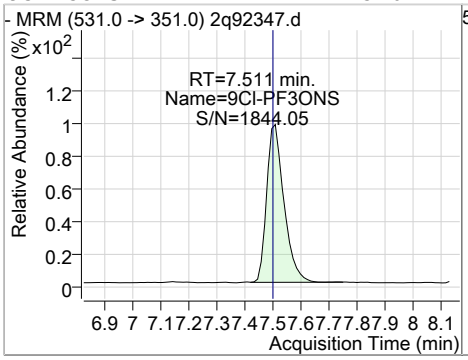
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.05	7.25	0.00	55682	463.0 -> 219.0	20.5	0.0	51.3

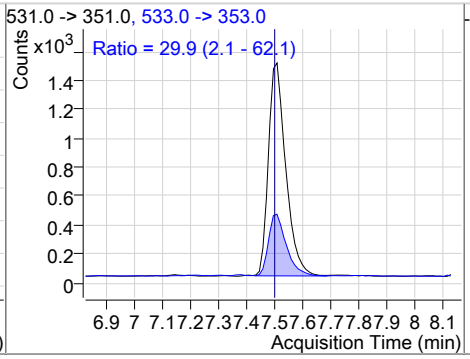


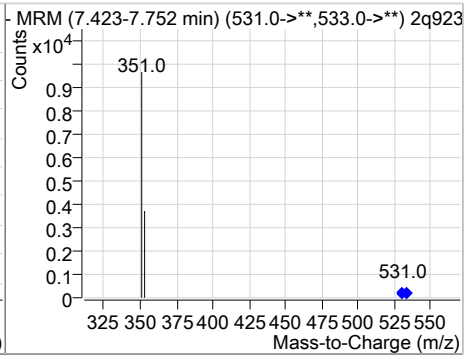




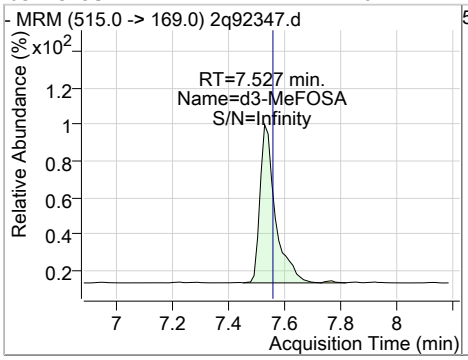
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	3.70	7.51	0.01	6313	533.0 -> 353.0	29.9	2.1	62.1

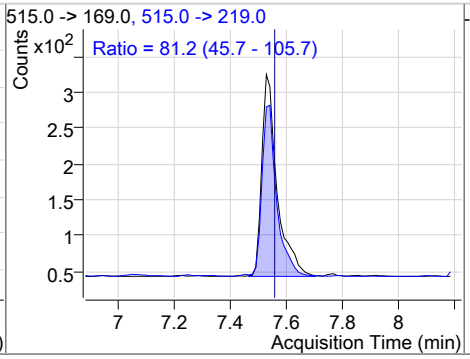


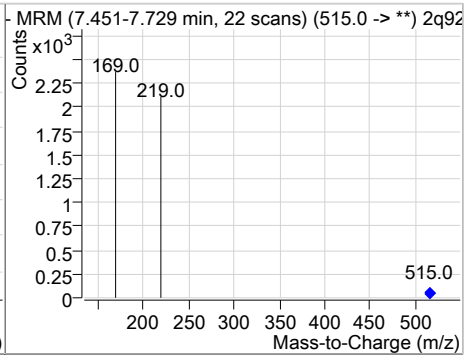




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	0.77	7.53	-0.03	1074	515.0 -> 219.0	81.2	45.7	105.7

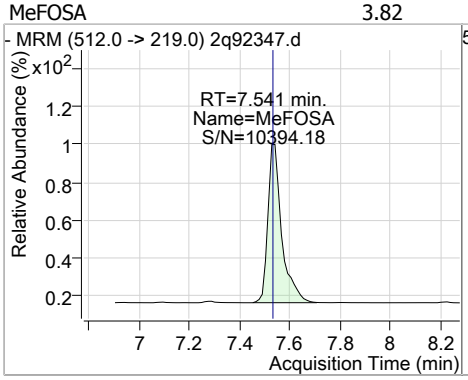


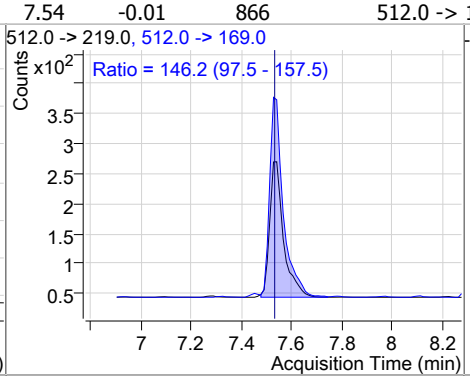


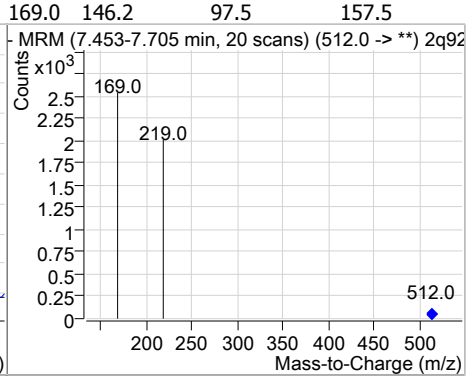


Perfluorinated Compounds by LC/MS/MS

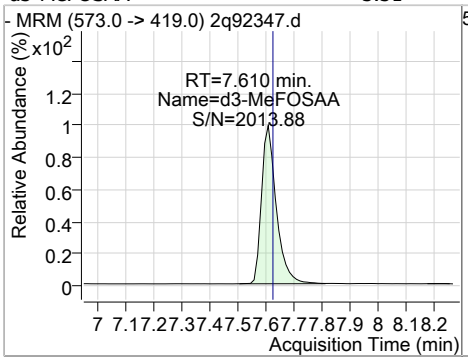
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	3.82	7.54	-0.01	866	512.0 -> 169.0	146.2	97.5	157.5

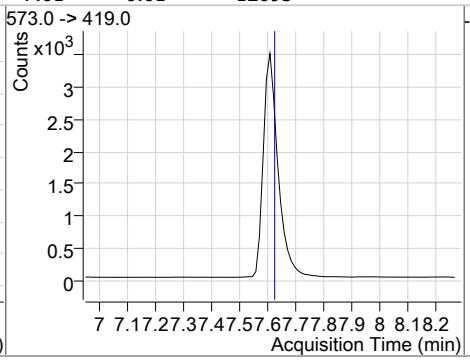


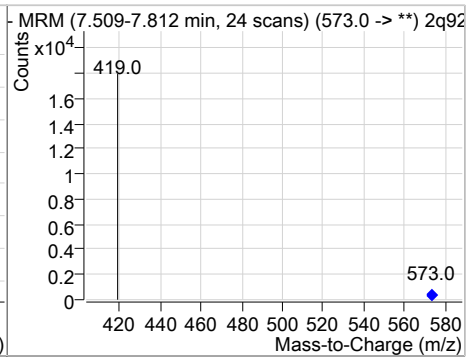




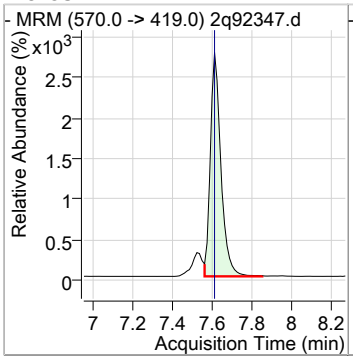
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.31	7.61	-0.01	12695				

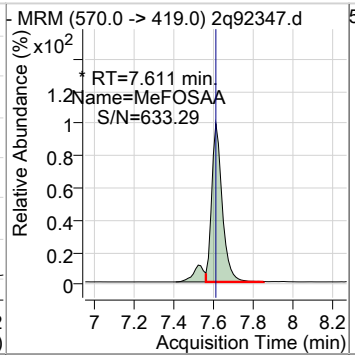


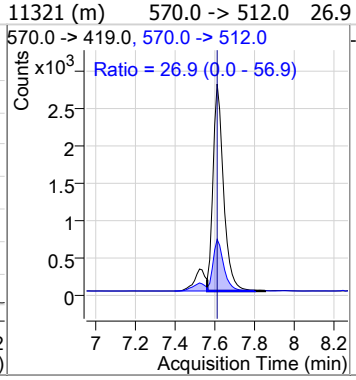


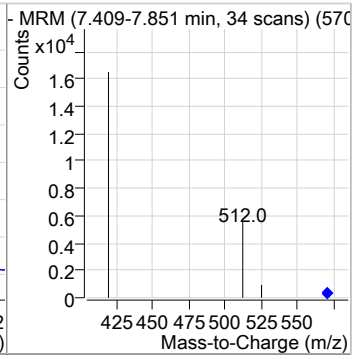


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	3.88	7.61	-0.01	11321 (m)	570.0 -> 512.0	26.9	0.0	56.9

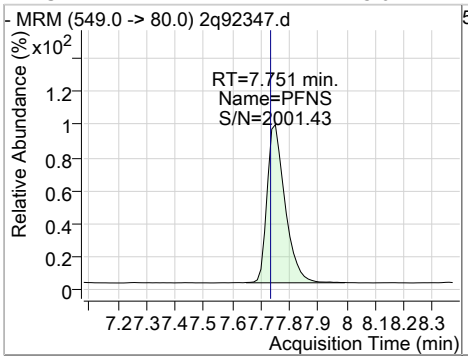


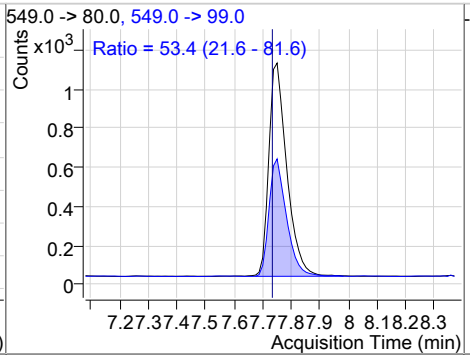


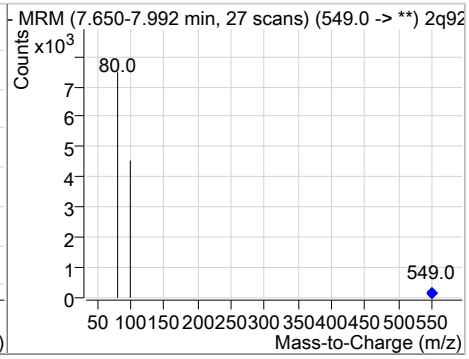




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	3.61	7.75	0.01	4767	549.0 -> 99.0	53.4	21.6	81.6

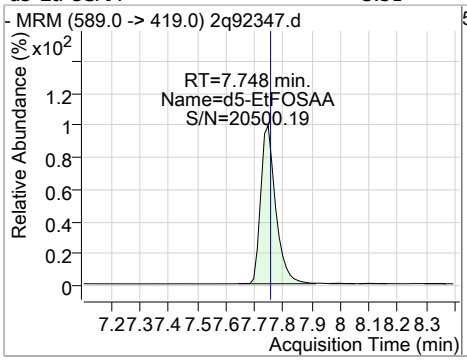


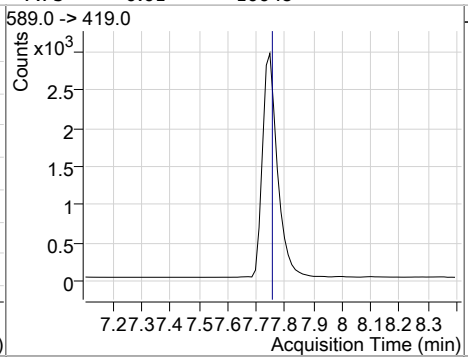


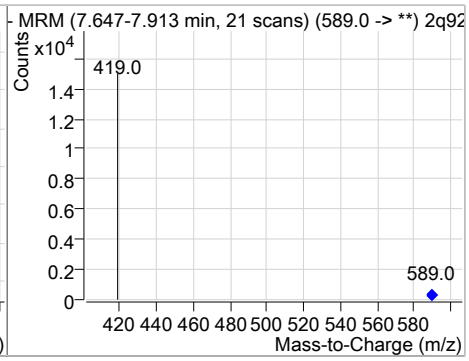


Perfluorinated Compounds by LC/MS/MS

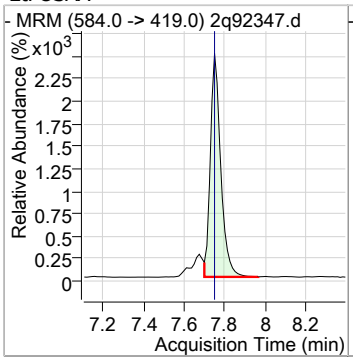
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.51	7.75	-0.01	10648				

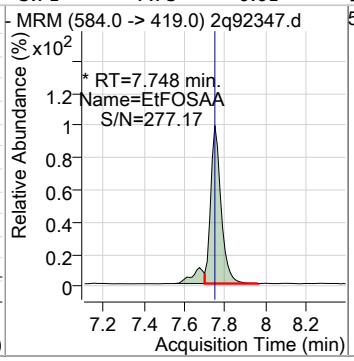


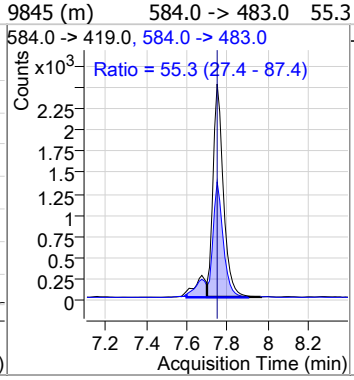


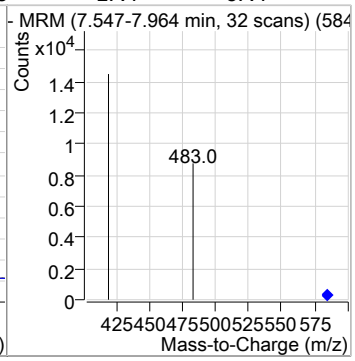


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	3.71	7.75	-0.01	9845 (m)	584.0 -> 483.0	55.3	27.4	87.4

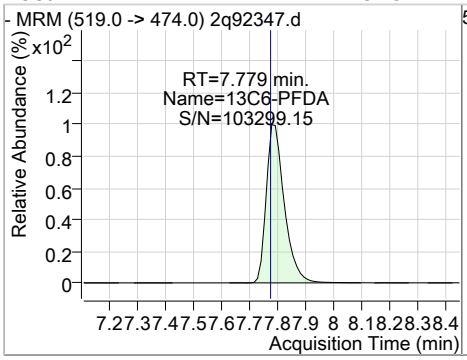


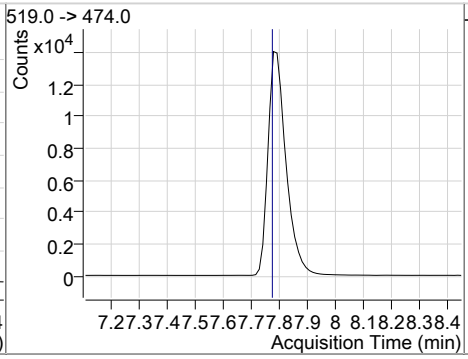


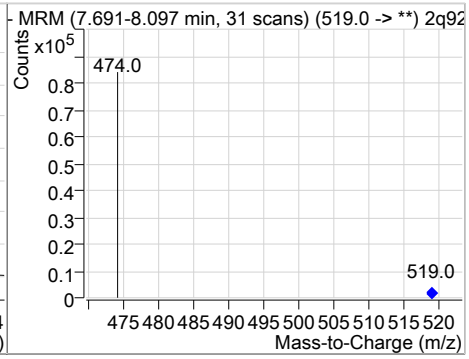




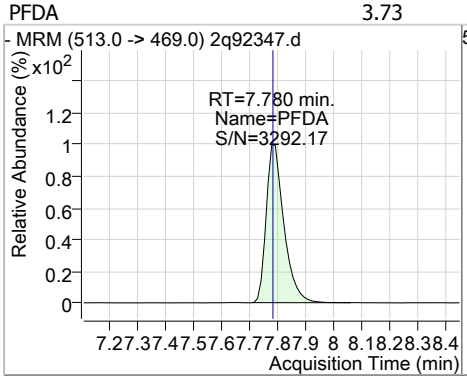
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	3.45	7.78	0.00	62895				

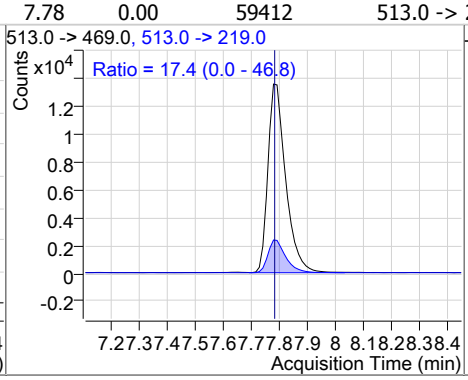


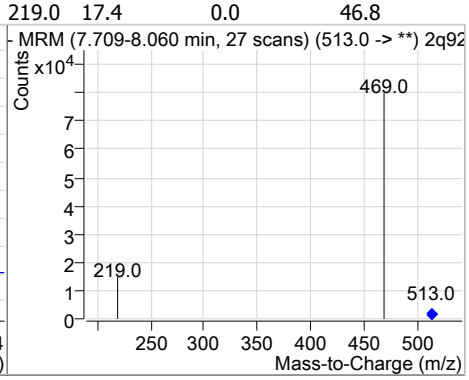




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	3.73	7.78	0.00	59412	513.0 -> 219.0	17.4	0.0	46.8

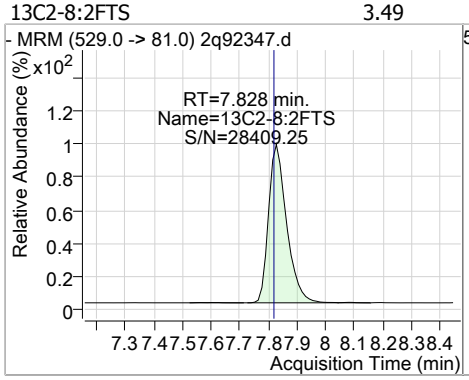


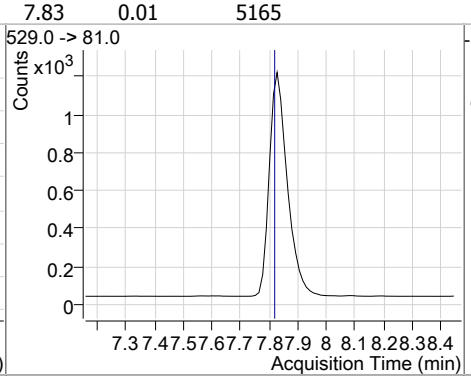


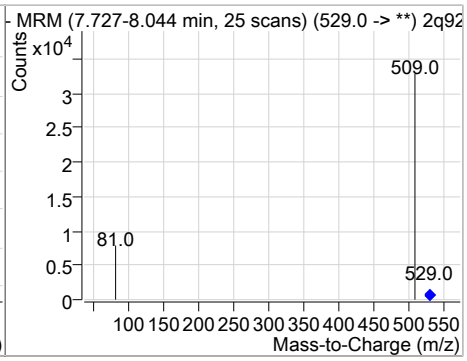


Perfluorinated Compounds by LC/MS/MS

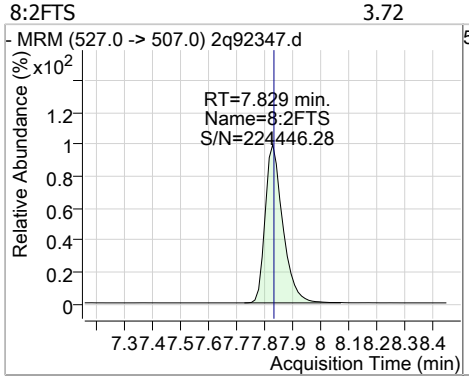
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	3.49	7.83	0.01	5165				

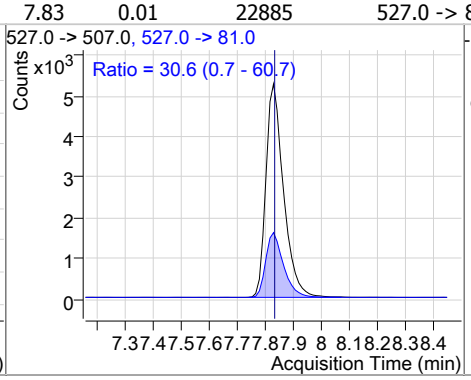


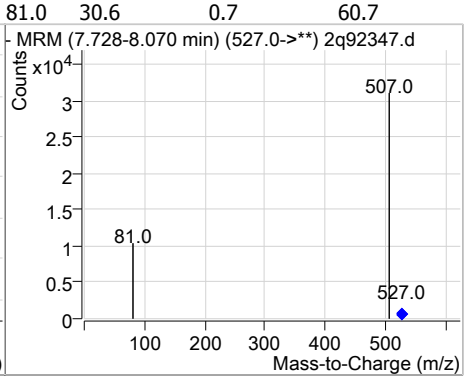




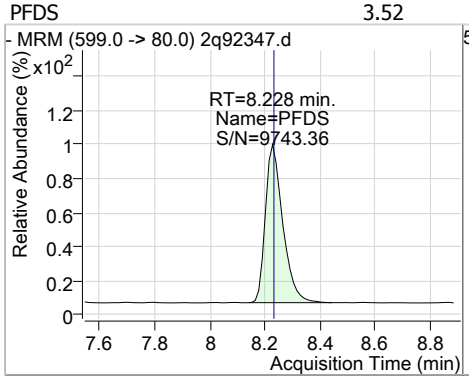
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	3.72	7.83	0.01	22885	527.0 -> 81.0	30.6	0.7	60.7

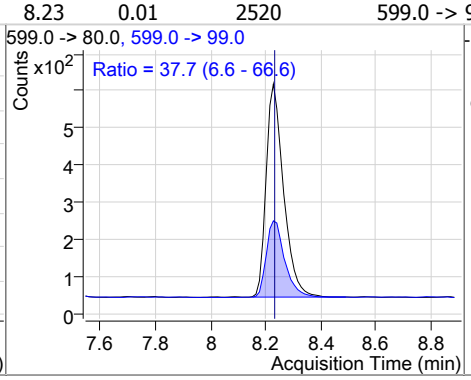


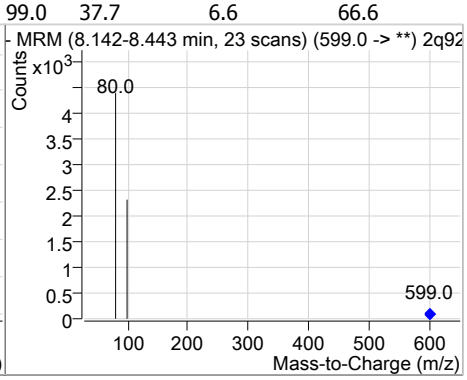




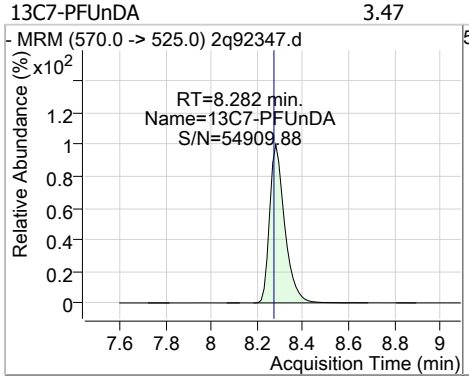
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	3.52	8.23	0.01	2520	599.0 -> 99.0	37.7	6.6	66.6

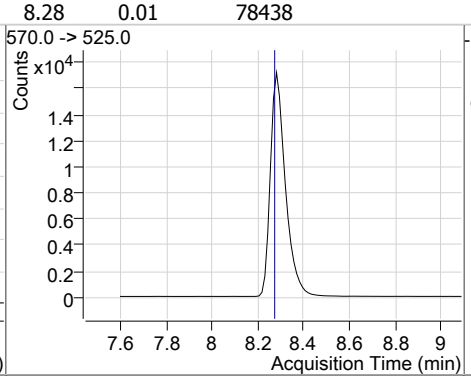


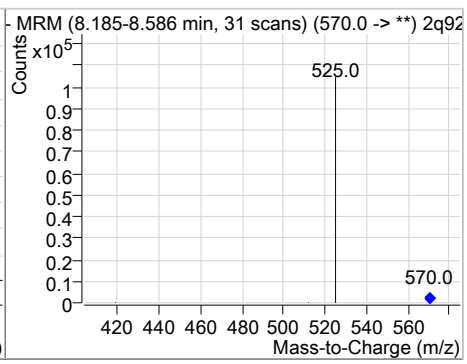




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	3.47	8.28	0.01	78438				

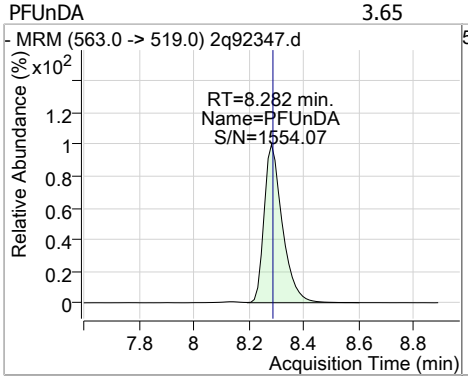


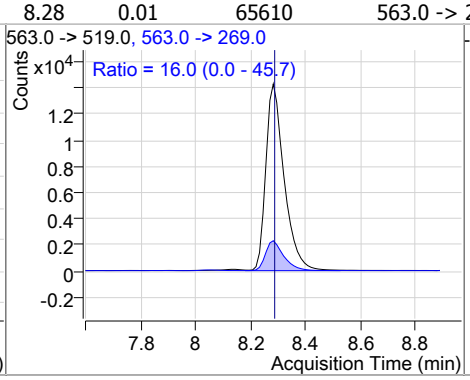


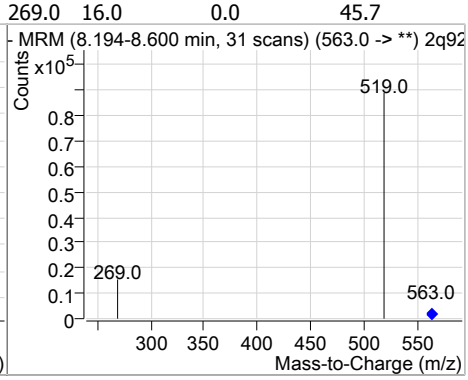


Perfluorinated Compounds by LC/MS/MS

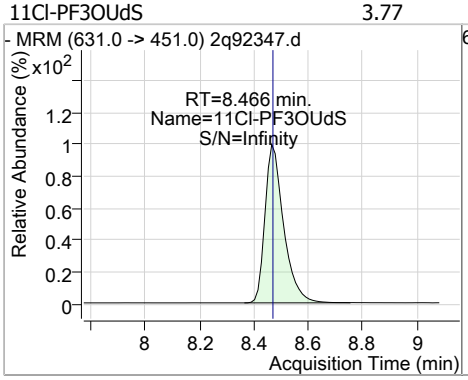
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	3.65	8.28	0.01	65610	563.0 -> 269.0	16.0	0.0	45.7

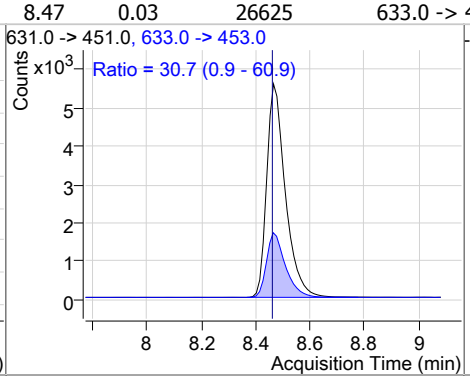


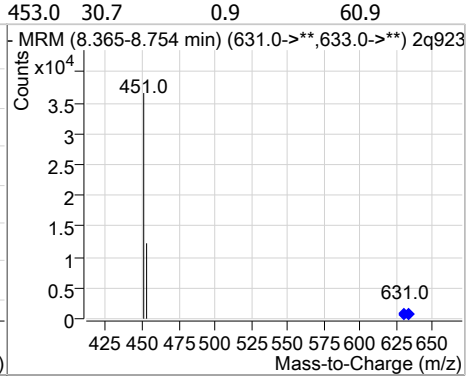




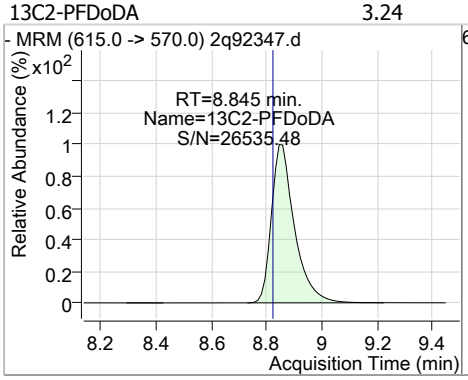
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	3.77	8.47	0.03	26625	633.0 -> 453.0	30.7	0.9	60.9

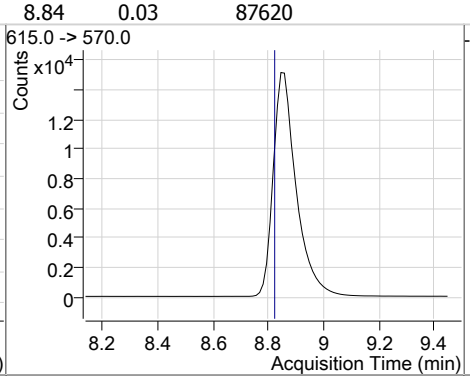


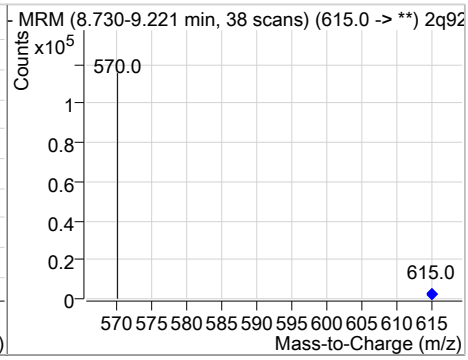




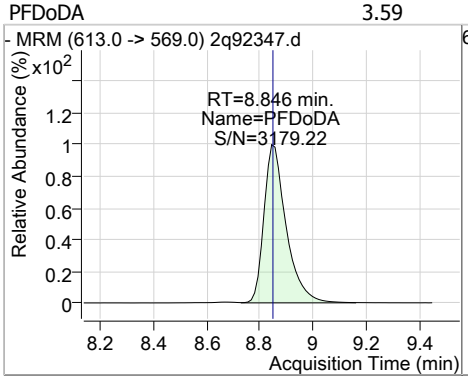
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	3.24	8.84	0.03	87620				

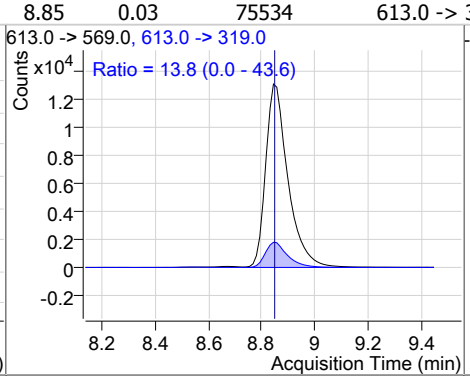


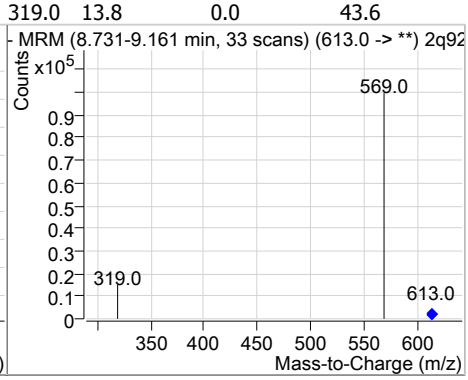




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	3.59	8.85	0.03	75534	613.0 -> 319.0	13.8	0.0	43.6

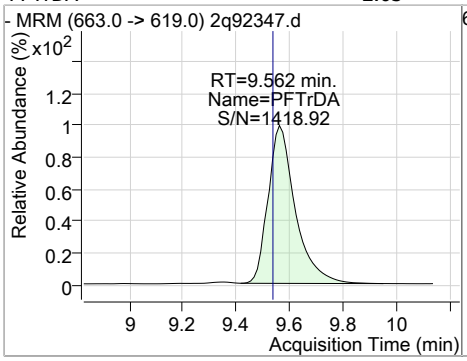


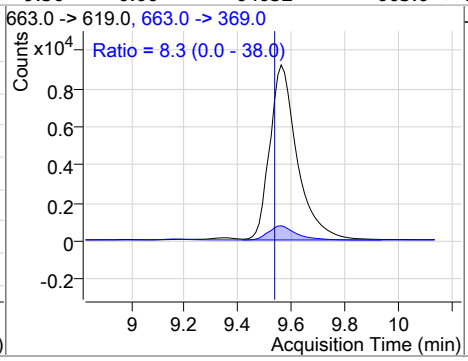


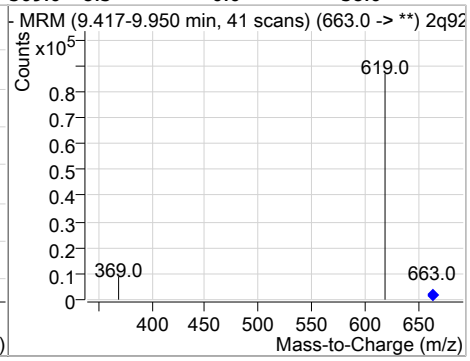


Perfluorinated Compounds by LC/MS/MS

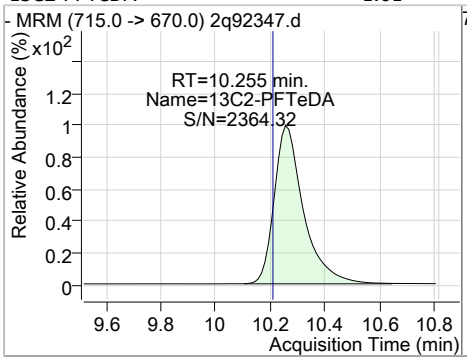
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	2.63	9.56	0.06	64652	663.0 -> 369.0	8.3	0.0	38.0

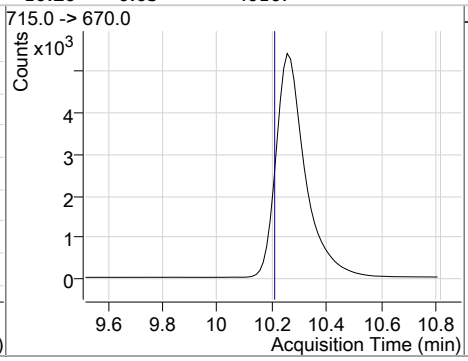


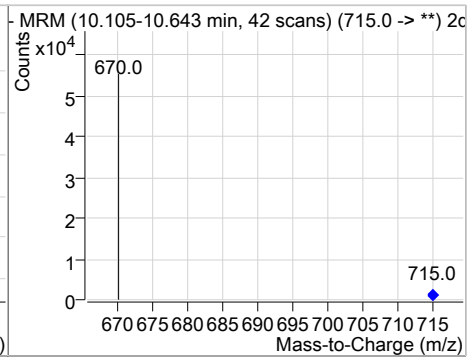




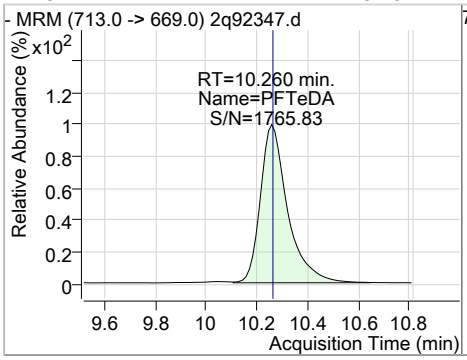
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.61	10.26	0.05	40107				

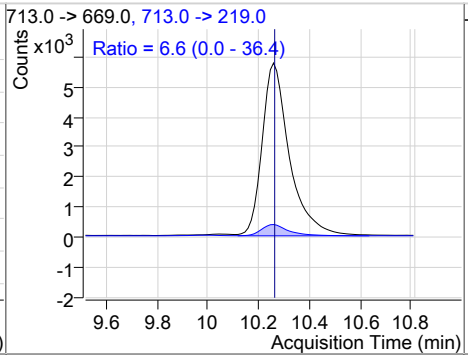


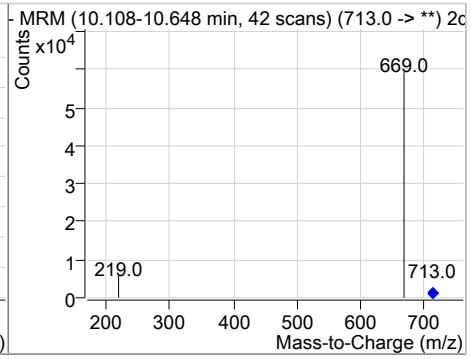




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	3.48	10.26	0.05	42523	713.0 -> 219.0	6.6	0.0	36.4







Manual Integration Approval Summary

Sample Number: OP91428-MS
Lab FileID: 2Q92347.D
Injection Time: 06/03/22 13:19
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 11:48 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:18

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92327.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 9:46:36 PM
Sample Name : op91428-DUP
Vial : P6-B9
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91428,S2Q1293,125,,,1.0,1,water

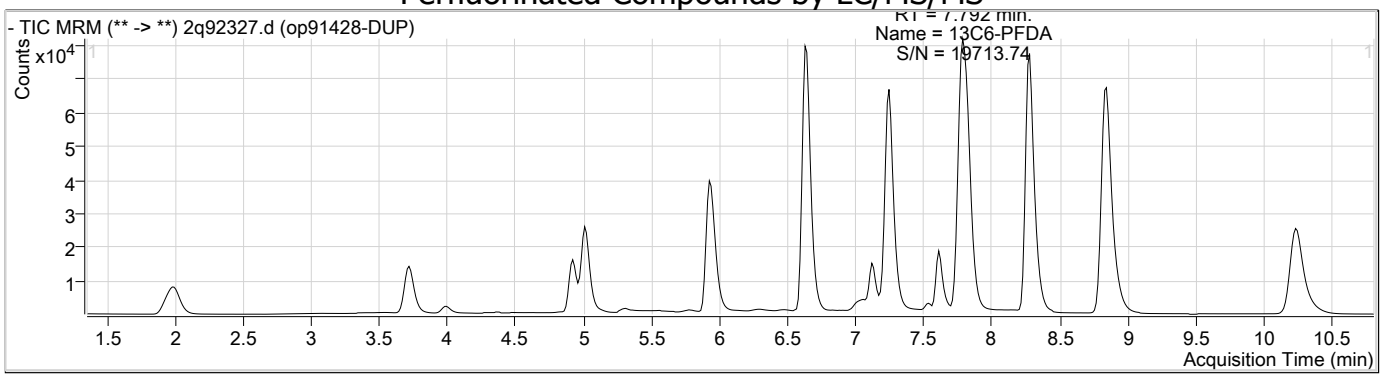
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	49077	20.00	µg/L	-0.013
M4-PFBA	1.977	217.0 -> 172.0	58375	20.00	µg/L	-0.038
M5-PFPeA	3.724	268.0 -> 223.0	64891	20.00	µg/L	-0.013
M5-PFHxA	5.014	318.0 -> 273.0	97470	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	146738	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	213511	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	234962	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	296861	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	351861	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	384521	20.00	µg/L	0.027
M2-PFTeDA	10.230	715.0 -> 670.0	187204	20.00	µg/L	0.025
M8-FOSA	7.124	506.0 -> 78.0	46212	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	7880	20.00	µg/L	-0.013
M3-PFHxS	5.967	402.0 -> 99.0	11386	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	15903	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	7234	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	16453	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	23665	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	60263	20.00	µg/L	-0.013
M3-HFPO-DA	5.306	287.0 -> 169.0	3739	20.00	µg/L	-0.013
M3-MeFOSA	7.539	515.0 -> 169.0	4013	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	7234	15.55	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%		
13C2-6:2FTS	6.634	429.0 -> 81.0	16453	15.91	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C2-8:2FTS	7.828	529.0 -> 81.0	23665	15.98	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.9%		
13C2-PFDoDA	8.845	615.0 -> 570.0	384521	14.24	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.2%		
13C2-PFTeDA	10.230	715.0 -> 670.0	187204	7.52	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 37.6%		
13C3-PFBS	3.992	302.0 -> 99.0	7880	15.50	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%		
13C3-PFHxS	5.967	402.0 -> 99.0	11386	15.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.9%		
13C4-PFBA	1.977	217.0 -> 172.0	58375	15.11	µg/L	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.5%		
13C4-PFHpA	5.929	367.0 -> 322.0	146738	15.80	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.0%		
d5-EtFOSAA	7.748	589.0 -> 419.0	49077	16.17	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.8%		
13C5-PFHxA	5.014	318.0 -> 273.0	97470	14.44	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.2%		
13C5-PFPeA	3.724	268.0 -> 223.0	64891	14.24	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

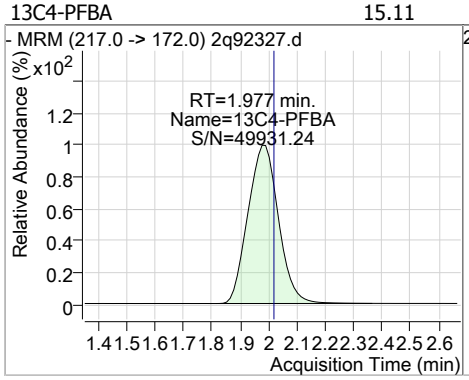
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.2%			
13C6-PFDA	7.792	519.0 -> 474.0	296861	16.30	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.5%			
13C7-PFUnDA	8.282	570.0 -> 525.0	351861	15.55	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%			
13C8-FOSA	7.124	506.0 -> 78.0	46212	12.56	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.8%			
13C8-PFOA	6.649	421.0 -> 376.0	213511	16.58	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%			
13C8-PFOS	7.225	507.0 -> 99.0	15903	15.32	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.6%			
13C9-PFNA	7.252	472.0 -> 427.0	234962	16.11	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.5%			
d3-MeFOSAA	7.610	573.0 -> 419.0	60263	15.71	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.6%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	3739	14.36	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%			
d3-MeFOSA	7.539	515.0 -> 169.0	4013	2.87	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 14.3%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.983	213.0 -> 169.0	1933	1.29	µg/L		100
PFBS	3.982	299.0 -> 80.0	1170	0.89	µg/L		100
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.930	363.0 -> 319.0	8156	0.68	µg/L		95
PFHpS	6.645	449.0 -> 80.0	1085	0.81	µg/L	m	94
PFHxA	5.015	313.0 -> 269.0	9258	2.57	µg/L		100
PFHxS	5.967	399.0 -> 80.0	19726	13.81	µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.649	413.0 -> 369.0	9567	0.82	µg/L	m	95
PFOS	7.225	499.0 -> 80.0	45729	32.85	µg/L	m	96
PFPeA	3.726	263.0 -> 219.0	4611	0.92	µg/L		100
PFPeS	5.132	349.0 -> 80.0	989	1.10	µg/L		99
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

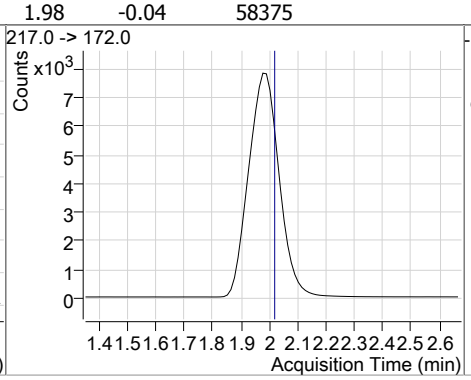
= Qualifier out of range, m = manually integrated, + = Area summed

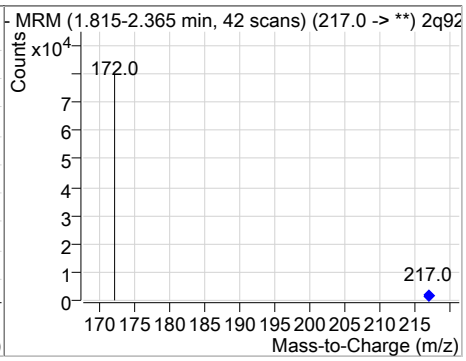
Perfluorinated Compounds by LC/MS/MS



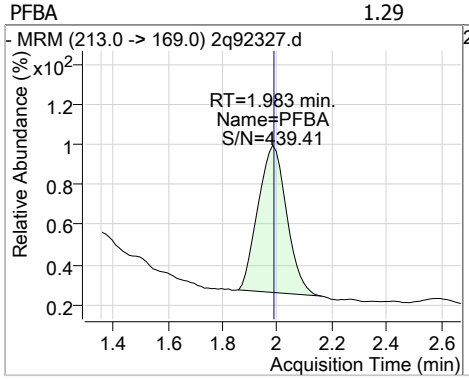
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.11	1.98	-0.04	58375				

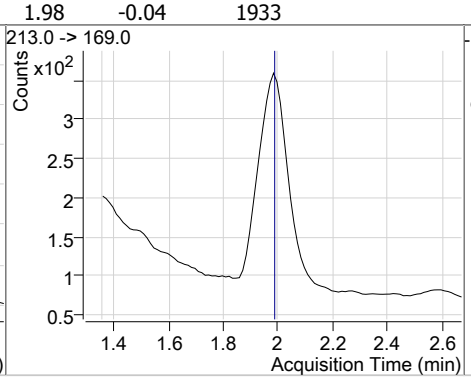


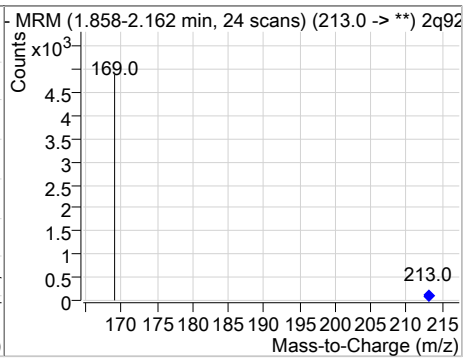




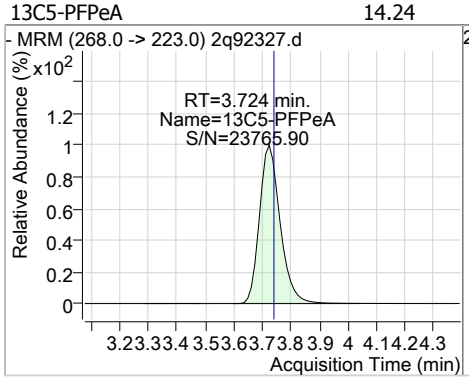
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.29	1.98	-0.04	1933				

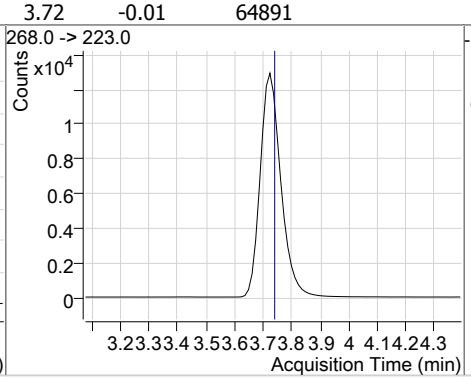


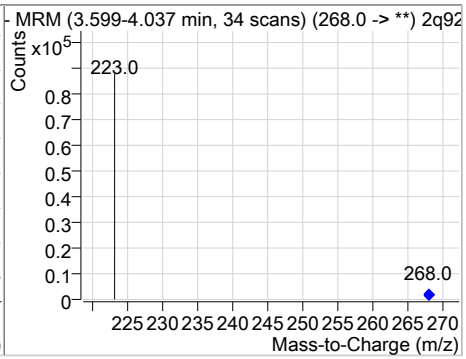




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	14.24	3.72	-0.01	64891				

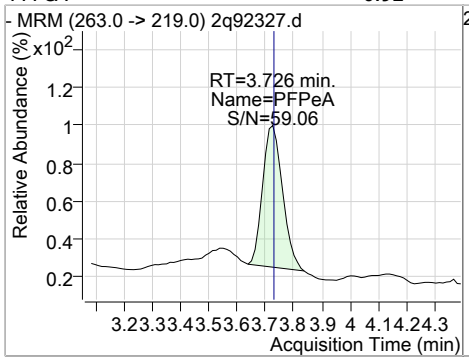


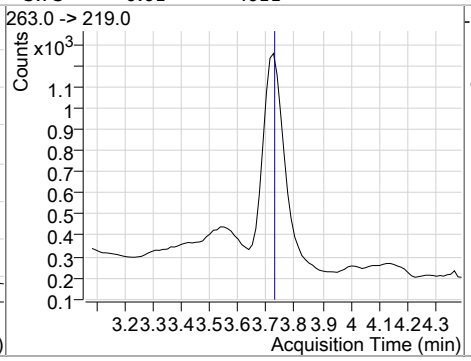


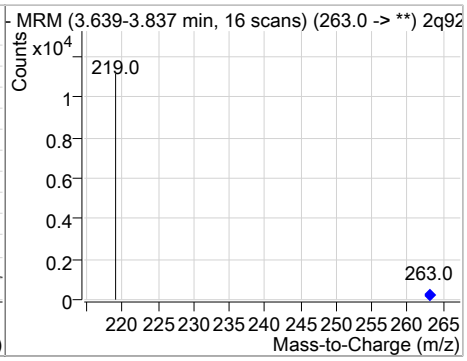


Perfluorinated Compounds by LC/MS/MS

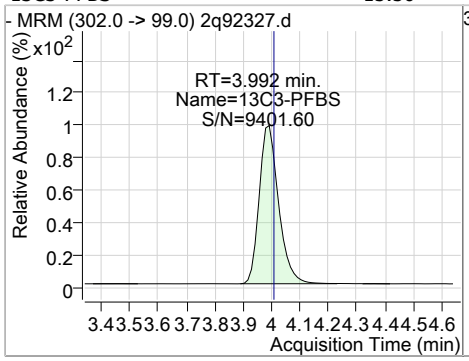
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.92	3.73	-0.01	4611				

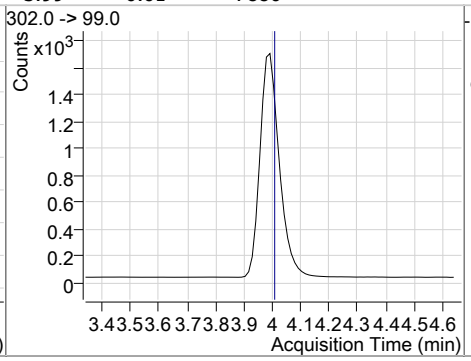


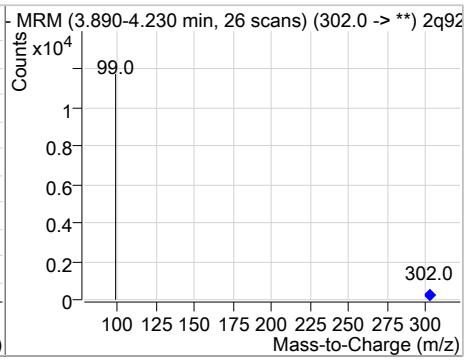




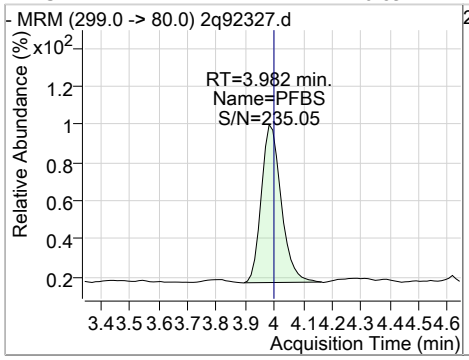
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.50	3.99	-0.01	7880				

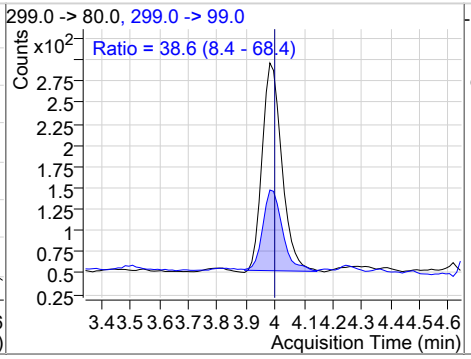


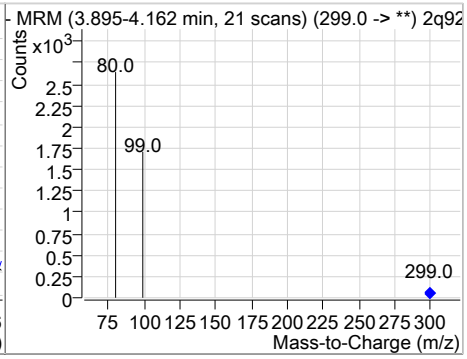




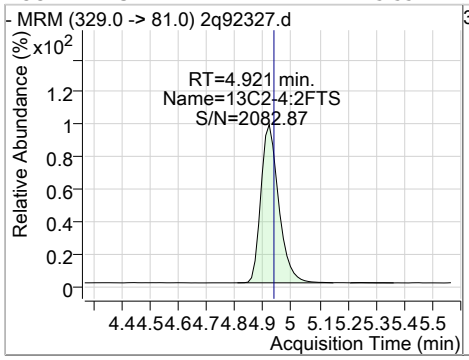
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.89	3.98	-0.03	1170	299.0 -> 99.0	38.6	8.4	68.4

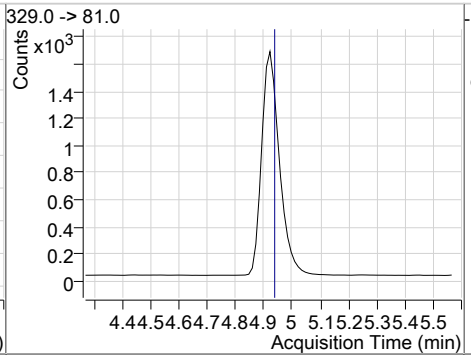


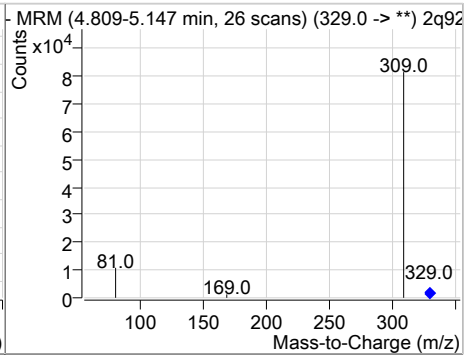




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.55	4.92	-0.01	7234				

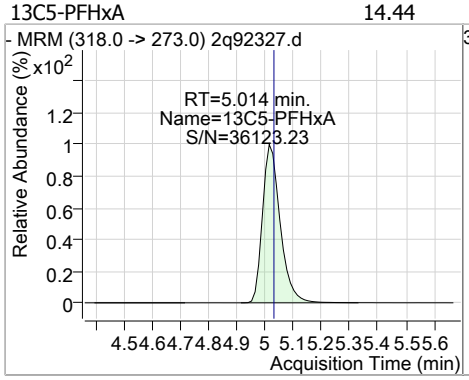


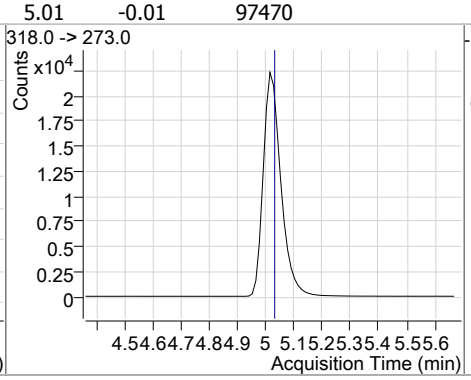


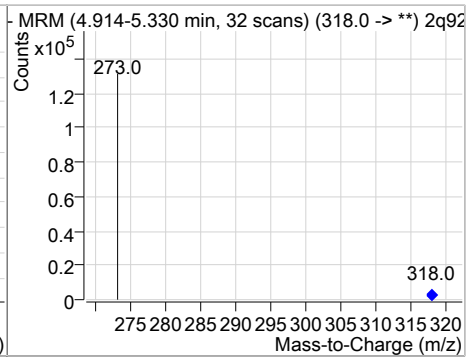


Perfluorinated Compounds by LC/MS/MS

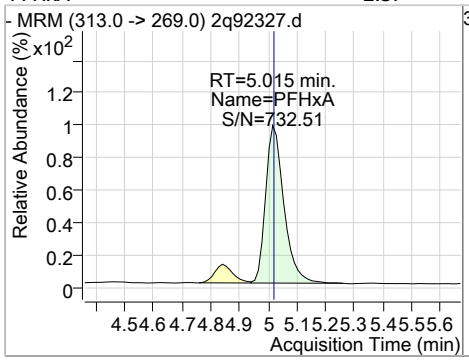
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.44	5.01	-0.01	97470				

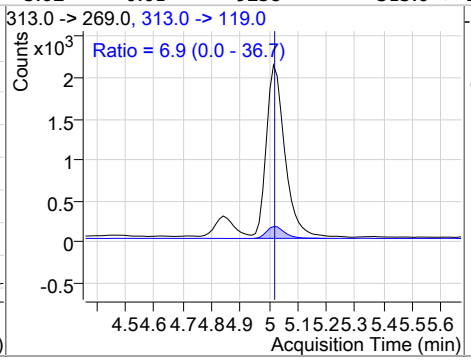


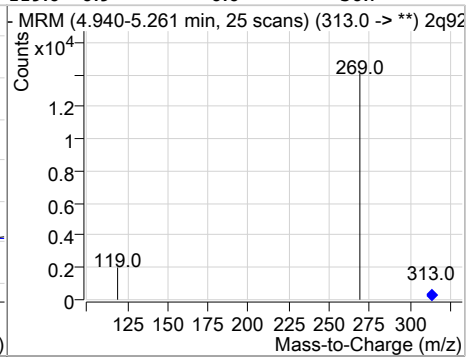




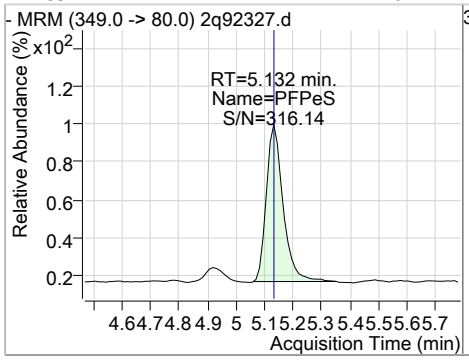
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.57	5.02	-0.01	9258	313.0 -> 119.0	6.9	0.0	36.7

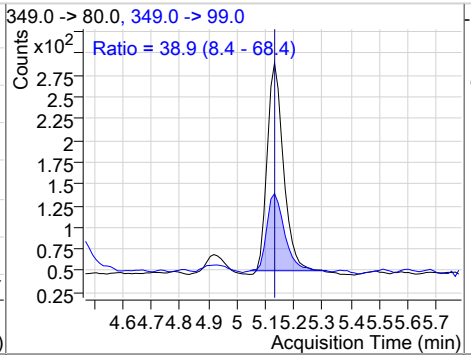


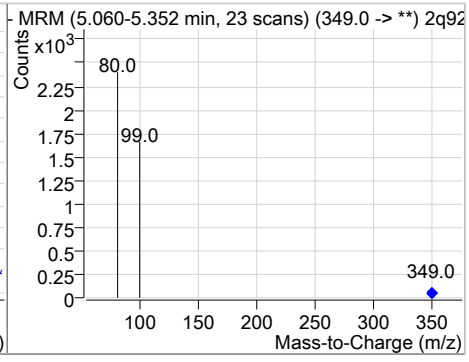




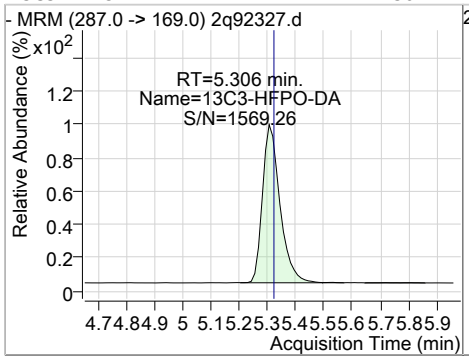
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.10	5.13	-0.01	989	349.0 -> 99.0	38.9	8.4	68.4

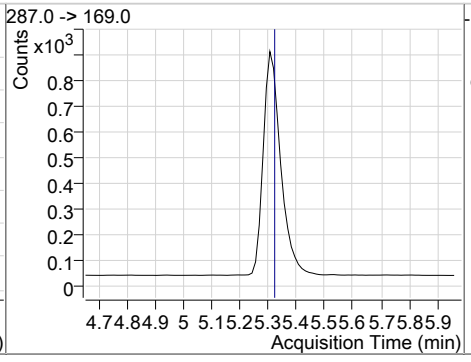


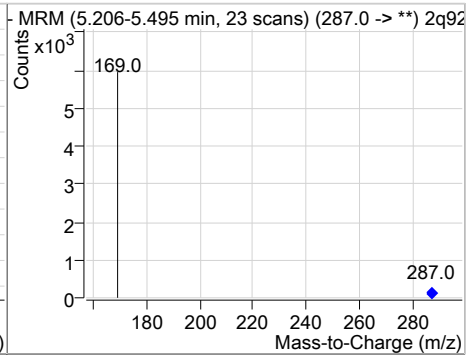




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	14.36	5.31	-0.01	3739				

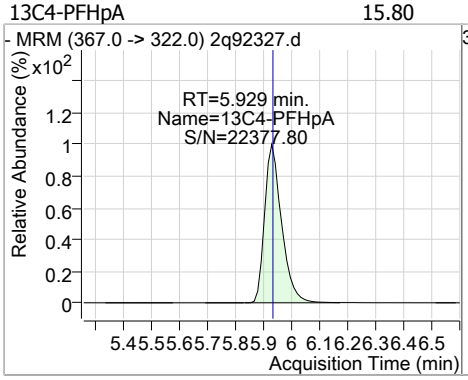


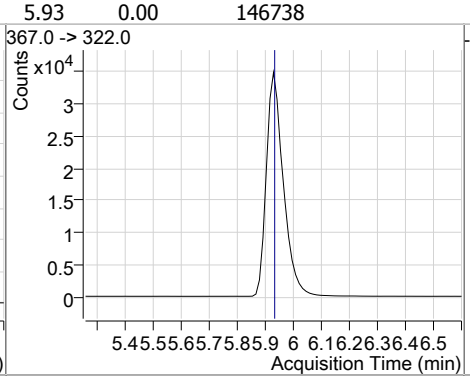


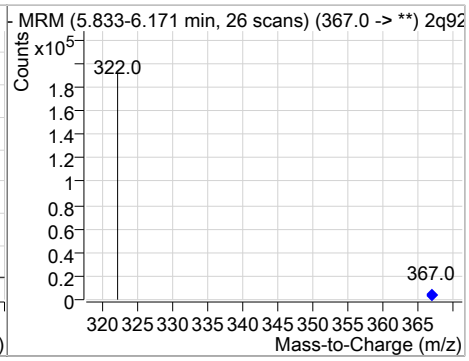


Perfluorinated Compounds by LC/MS/MS

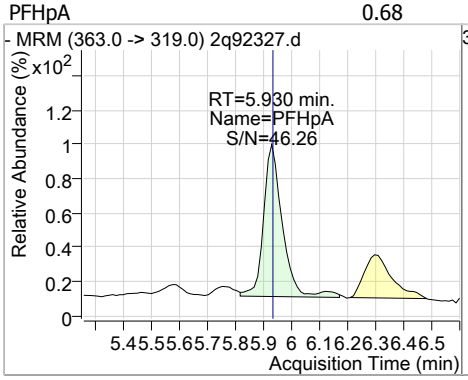
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.80	5.93	0.00	146738				

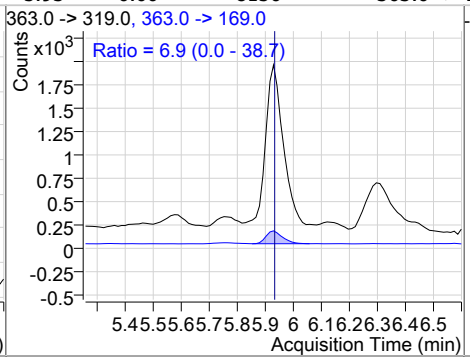


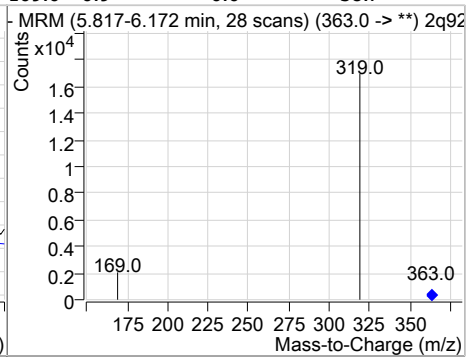




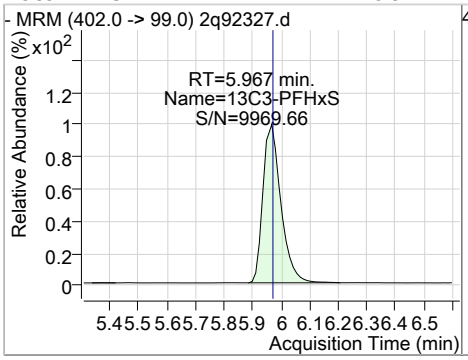
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.68	5.93	0.00	8156	363.0 -> 169.0	6.9	0.0	38.7

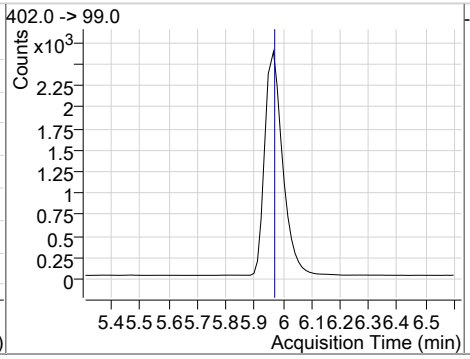


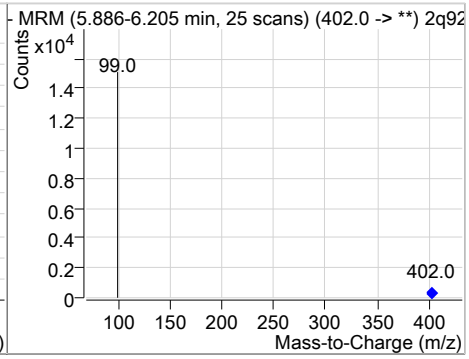




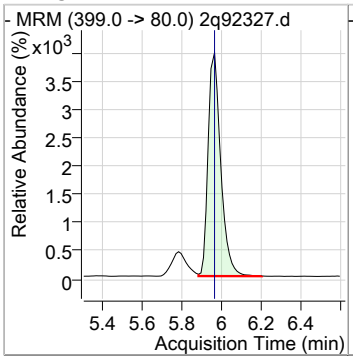
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.97	5.97	0.00	11386				

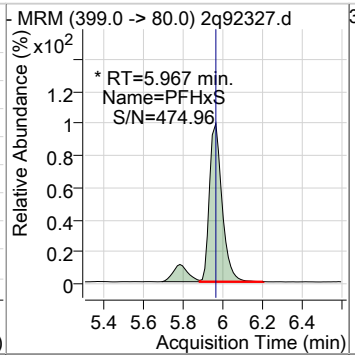


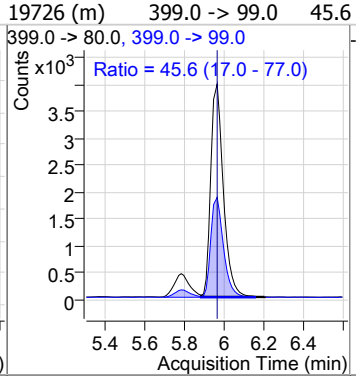


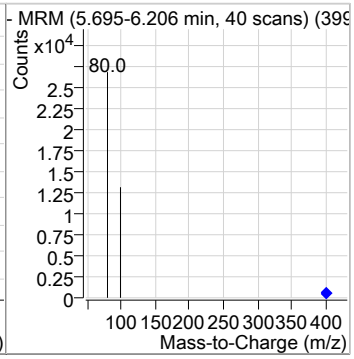


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	13.81	5.97	0.00	19726 (m)	399.0 -> 99.0	45.6	17.0	77.0



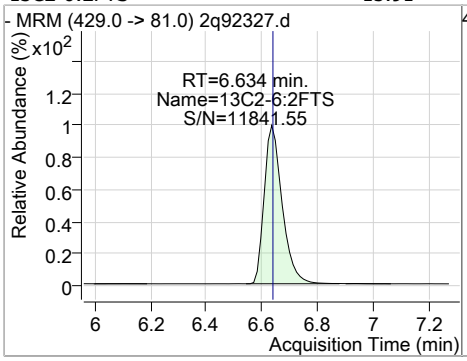


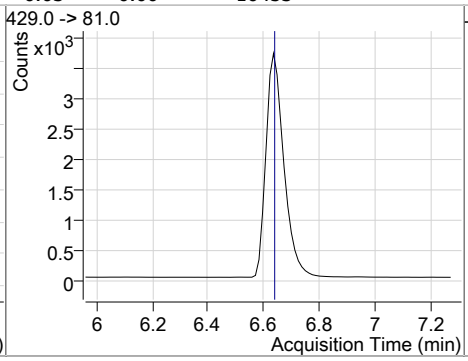


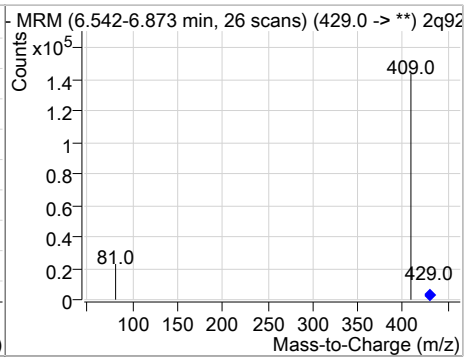


Perfluorinated Compounds by LC/MS/MS

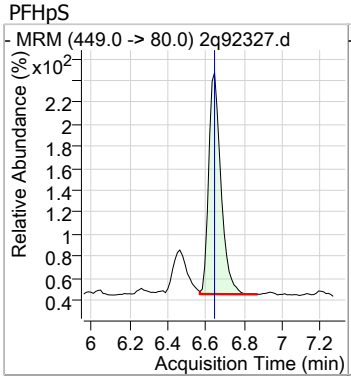
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.91	6.63	0.00	16453				

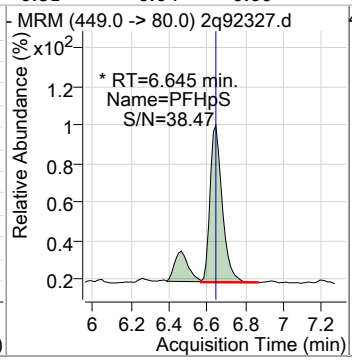


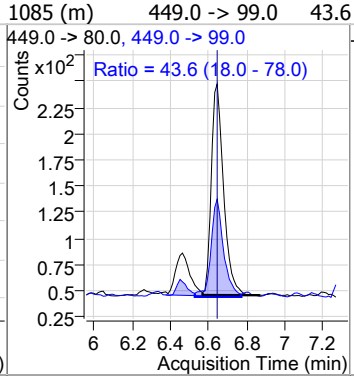


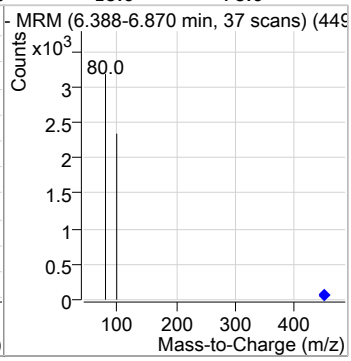


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.81	6.64	0.00	1085 (m)	449.0 -> 99.0	43.6	18.0	78.0

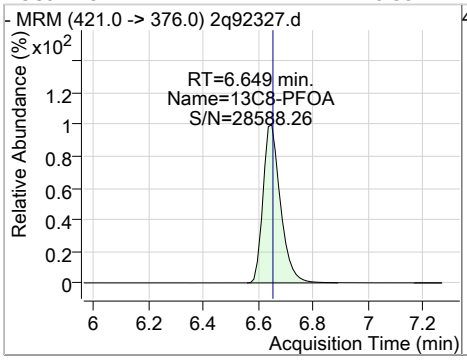


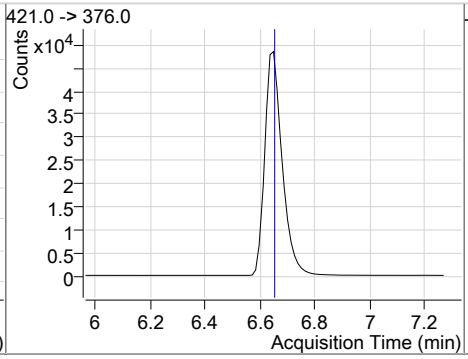


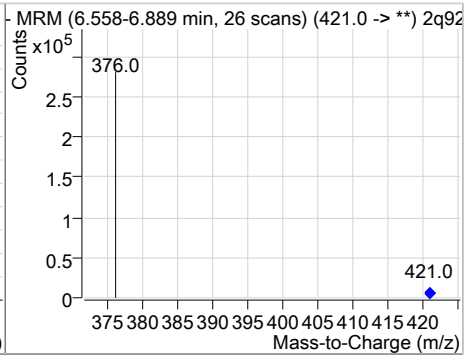




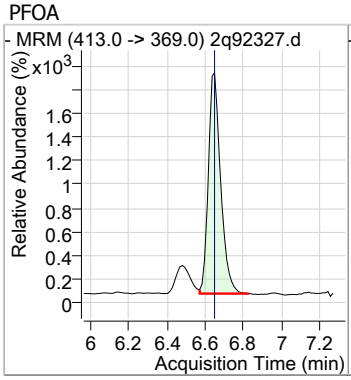
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.58	6.65	0.00	213511				

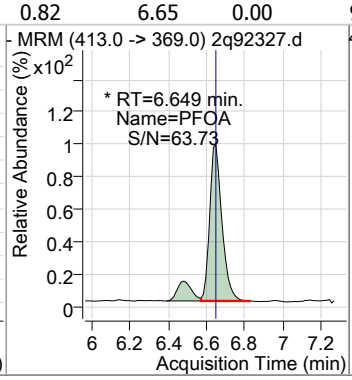


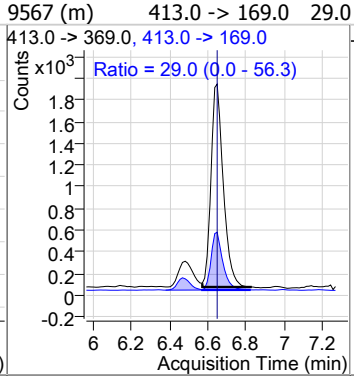


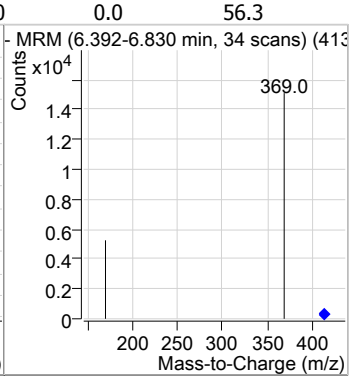


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.82	6.65	0.00	9567 (m)	413.0 -> 169.0	29.0	0.0	56.3



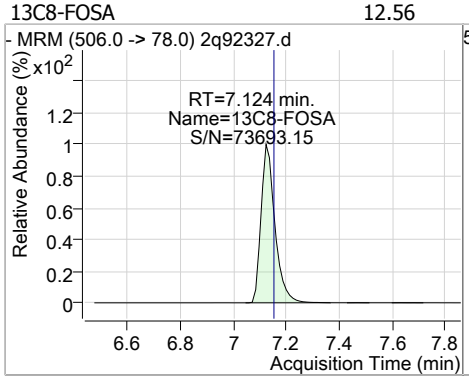


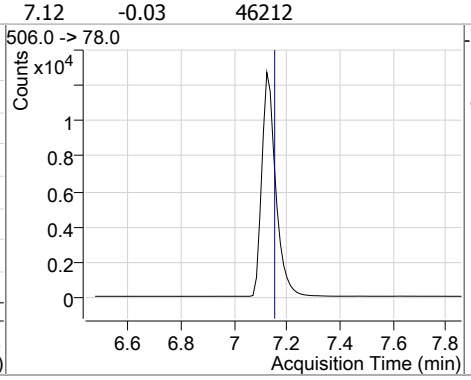


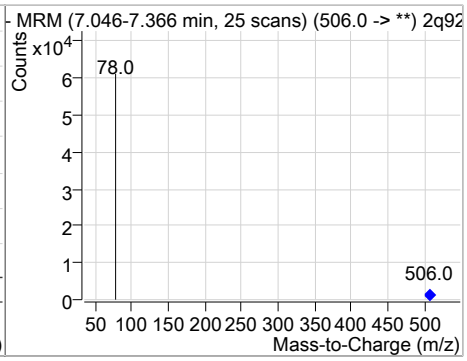


Perfluorinated Compounds by LC/MS/MS

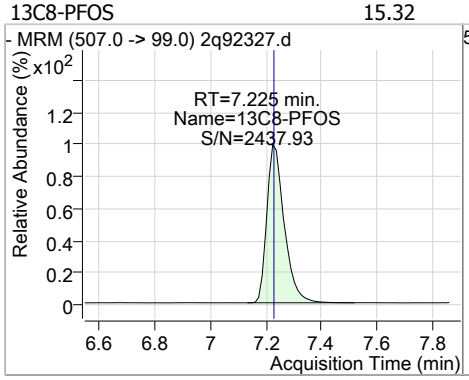
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.56	7.12	-0.03	46212				

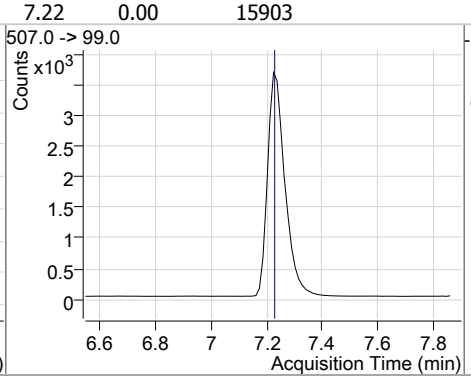


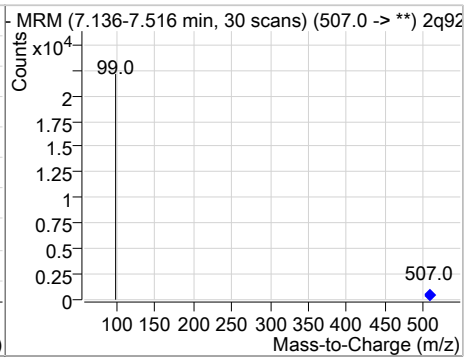




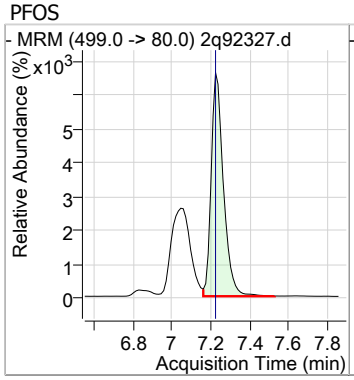
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.32	7.22	0.00	15903				

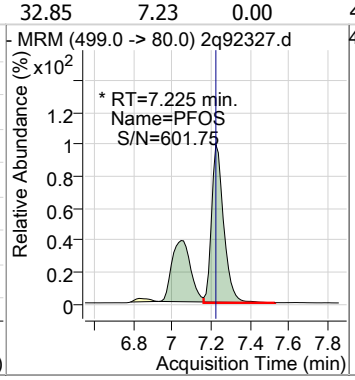


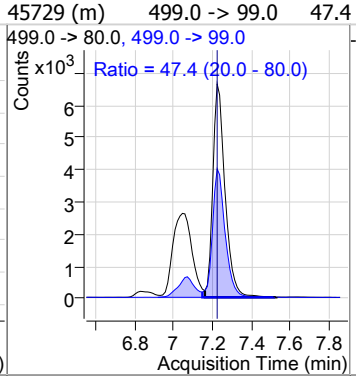


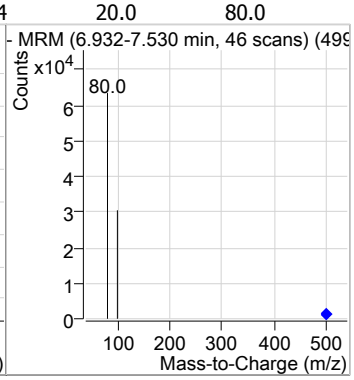


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	32.85	7.23	0.00	45729 (m)	499.0 -> 99.0	47.4	20.0	80.0

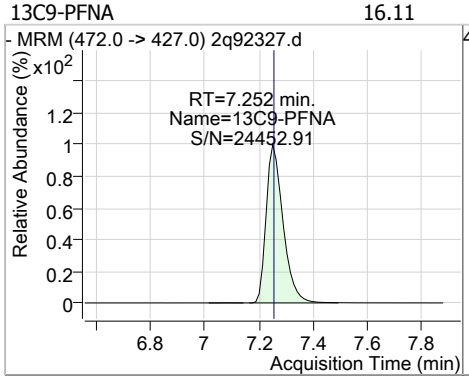


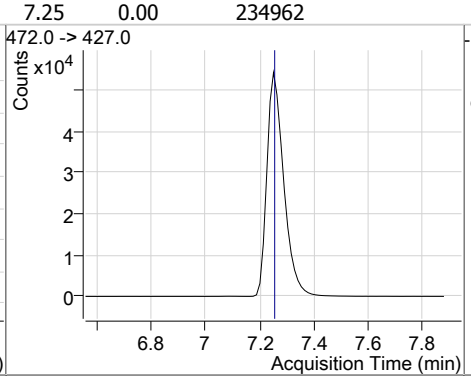


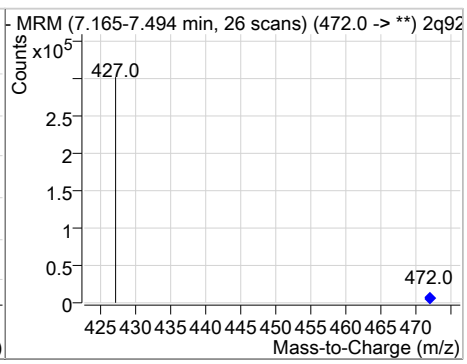




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.11	7.25	0.00	234962				

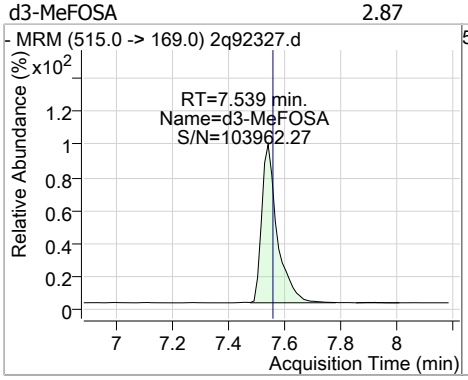


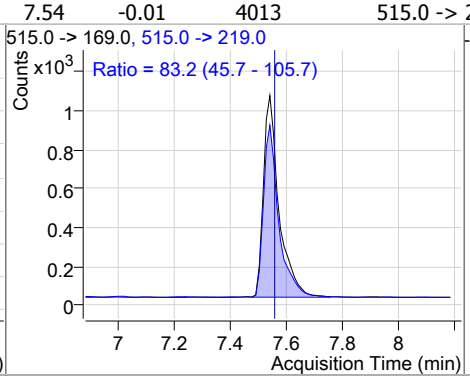


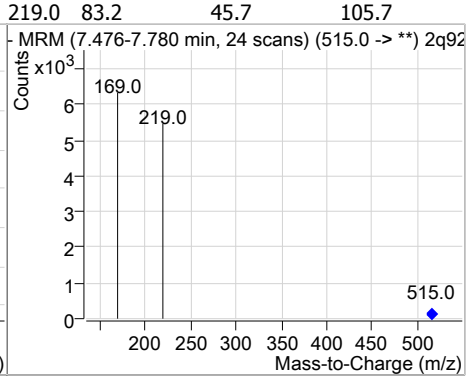


Perfluorinated Compounds by LC/MS/MS

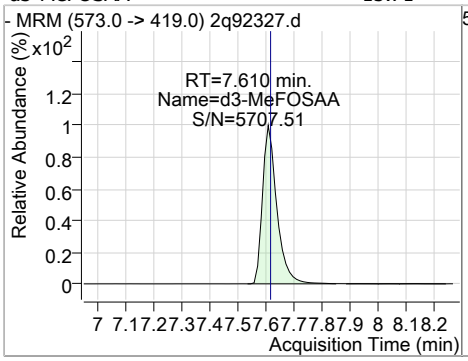
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.87	7.54	-0.01	4013	515.0 -> 219.0	83.2	45.7	105.7

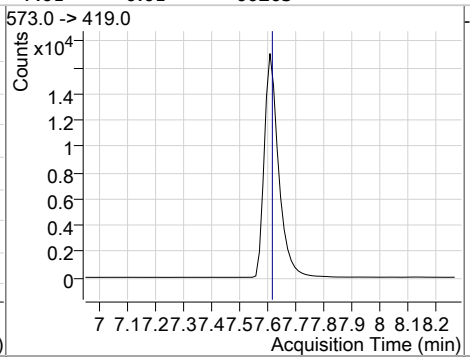


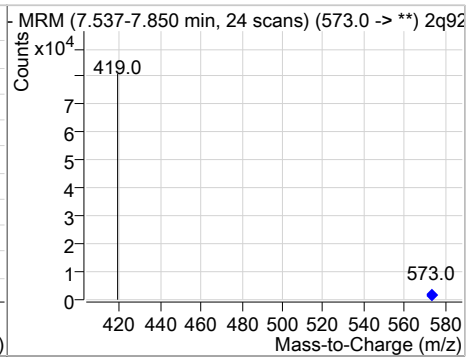




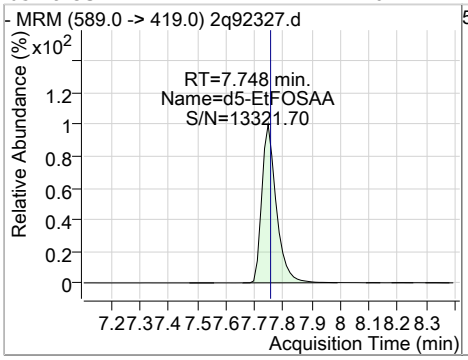
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.71	7.61	-0.01	60263				

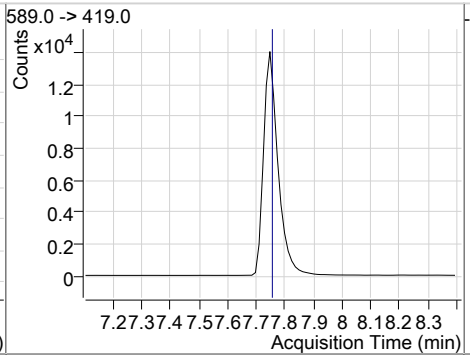


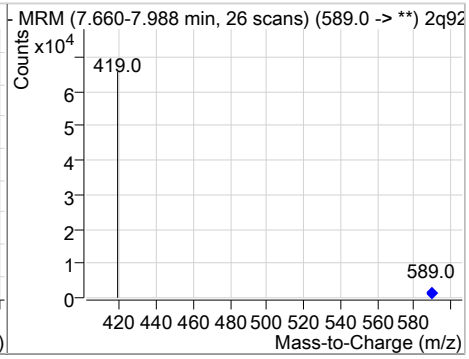




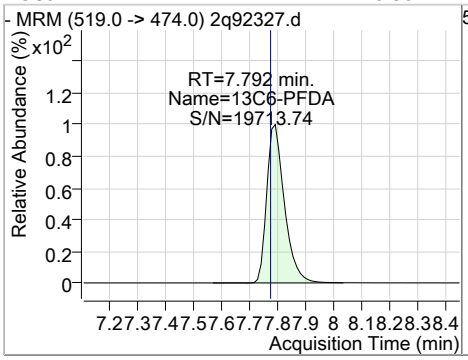
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	16.17	7.75	-0.01	49077				

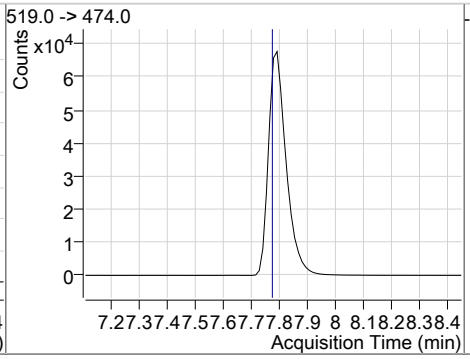


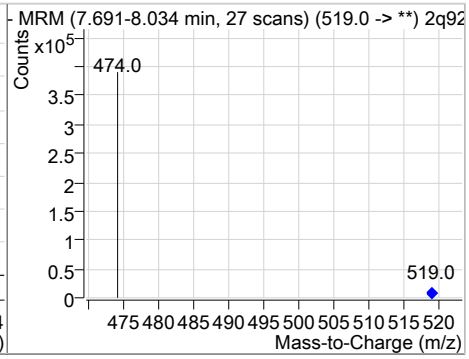




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.30	7.79	0.01	296861				

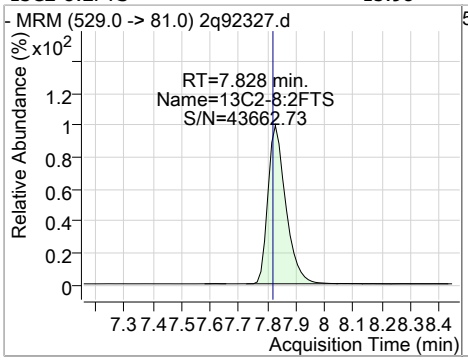


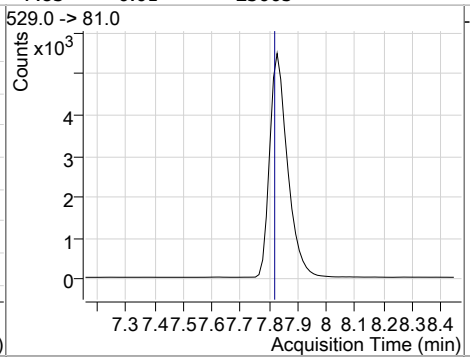


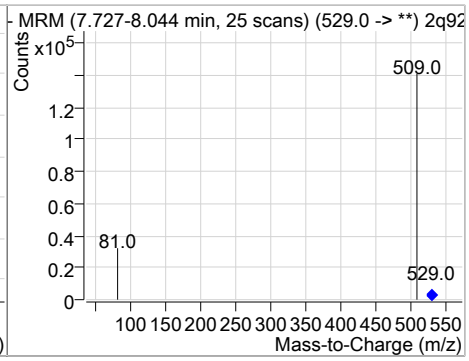


Perfluorinated Compounds by LC/MS/MS

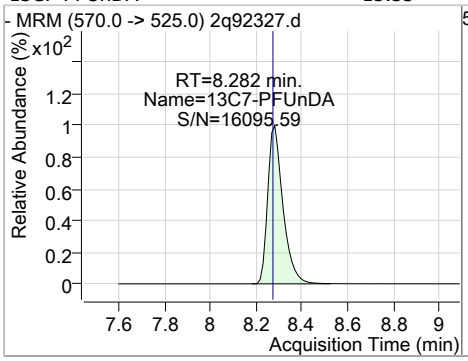
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.98	7.83	0.01	23665				

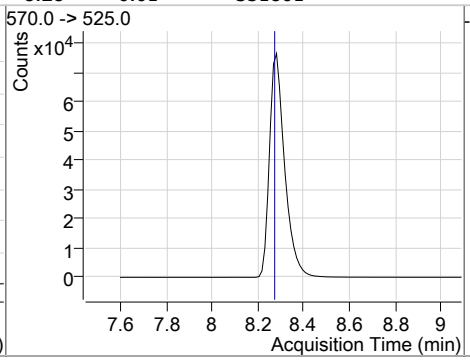


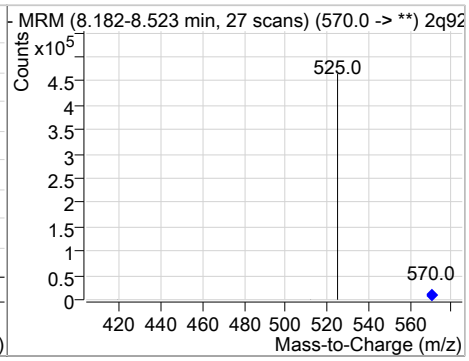




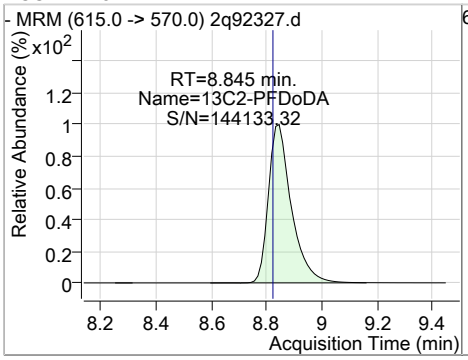
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.55	8.28	0.01	351861				

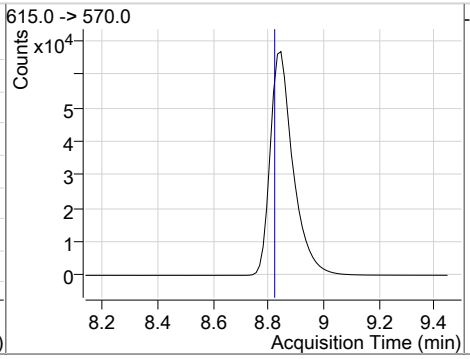


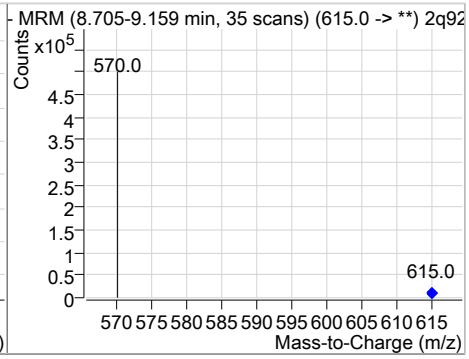




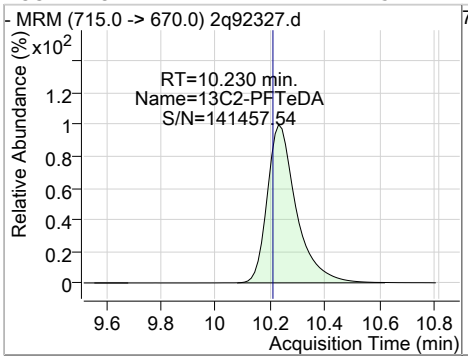
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.24	8.84	0.03	384521				

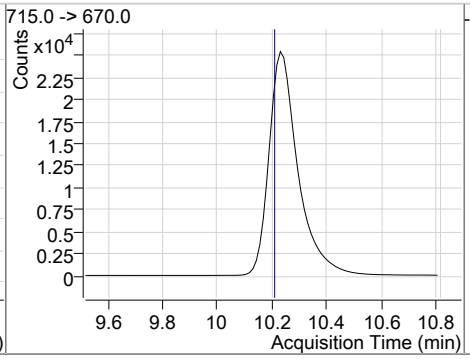


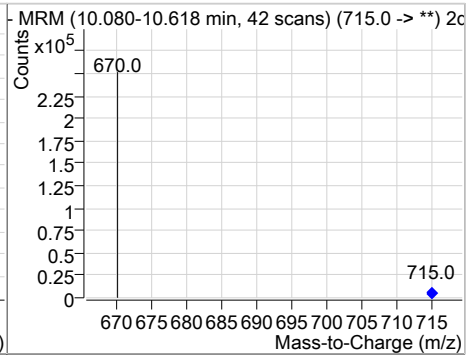




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	7.52	10.23	0.03	187204				







Manual Integration Approval Summary

Sample Number: OP91428-DUP
Lab FileID: 2Q92327.D
Injection Time: 06/02/22 21:46
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/05/22 18:17 Norman Farmer
Supervisor approved: 06/05/22 18:18 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.64	Split peak
Perfluorooctanoic acid	335-67-1		6.65	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:36

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91878.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/26/2022 7:15:57 PM
Sample Name : RT
Vial : P1-B2
DA Method File : ID_050922_S2Q1285.quantmethod.xml
Batch Name : s2q1286.batch.bin
Sample Information : op91255,S2Q1286,250,,,1.0,1,water

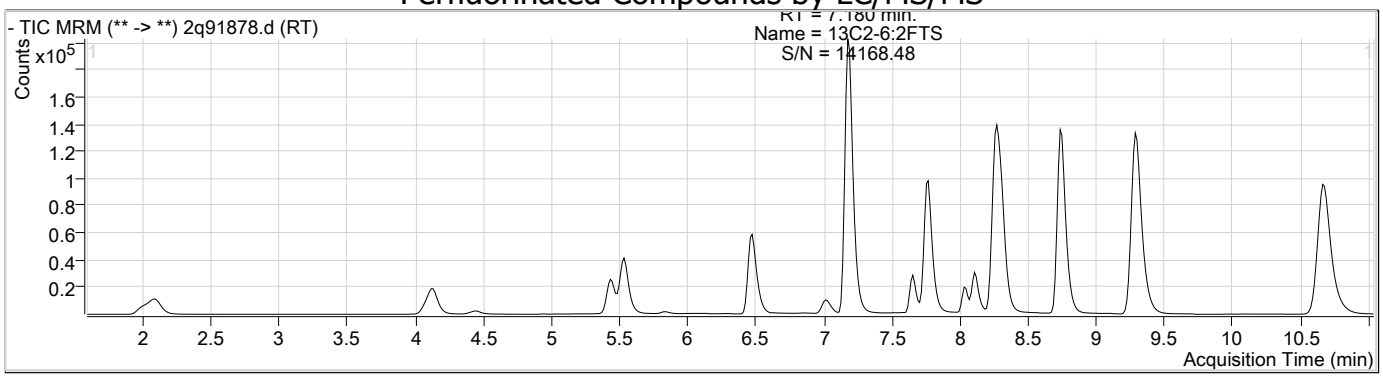
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	8.232	589.0 -> 419.0	83700	20.00	µg/L	0.013
M4-PFBA	2.077	217.0 -> 172.0	100273	20.00	µg/L	0.013
M5-PFPeA	4.124	268.0 -> 223.0	116158	20.00	µg/L	0.025
M5-PFHxA	5.539	318.0 -> 273.0	178648	20.00	µg/L	0.025
M4-PFHpA	6.480	367.0 -> 322.0	244577	20.00	µg/L	0.025
M8-PFOA	7.184	421.0 -> 376.0	346953	20.00	µg/L	0.025
M9-PFNA	7.777	472.0 -> 427.0	383789	20.00	µg/L	0.025
M6-PFDA	8.277	519.0 -> 474.0	481935	20.00	µg/L	0.025
M7-PFUnDA	8.741	570.0 -> 525.0	591534	20.00	µg/L	0.025
M2-PFDoDA	9.291	615.0 -> 570.0	725065	20.00	µg/L	0.025
M2-PFTeDA	10.663	715.0 -> 670.0	675775	20.00	µg/L	0.038
M8-FOSA	7.659	506.0 -> 78.0	100422	20.00	µg/L	0.027
M3-PFBS	4.442	302.0 -> 99.0	12931	20.00	µg/L	0.025
M3-PFHxS	6.510	402.0 -> 99.0	19161	20.00	µg/L	0.025
M8-PFOS	7.749	507.0 -> 99.0	25819	20.00	µg/L	0.026
M2-4:2FTS	5.434	329.0 -> 81.0	12269	20.00	µg/L	0.025
M2-6:2FTS	7.180	429.0 -> 81.0	26641	20.00	µg/L	0.025
M2-8:2FTS	8.313	529.0 -> 81.0	37701	20.00	µg/L	0.025
M3-MeFOSAA	8.107	573.0 -> 419.0	98877	20.00	µg/L	0.013
M3-HFPO-DA	5.843	287.0 -> 169.0	6224	20.00	µg/L	0.025
M3-MeFOSA	8.036	515.0 -> 169.0	36839	20.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.434	329.0 -> 81.0	12269	20.87	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C2-6:2FTS	7.180	429.0 -> 81.0	26641	20.69	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C2-8:2FTS	8.313	529.0 -> 81.0	37701	20.97	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C2-PFDoDA	9.291	615.0 -> 570.0	725065	20.35	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C2-PFTeDA	10.663	715.0 -> 670.0	675775	20.29	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C3-PFBS	4.442	302.0 -> 99.0	12931	20.17	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C3-PFHxS	6.510	402.0 -> 99.0	19161	20.60	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C4-PFBA	2.077	217.0 -> 172.0	100273	20.22	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.1%		
13C4-PFHpA	6.480	367.0 -> 322.0	244577	20.62	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
d5-EtFOSAA	8.232	589.0 -> 419.0	83700	20.92	ng/ml	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C5-PFHxA	5.539	318.0 -> 273.0	178648	20.71	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C5-PFPeA	4.124	268.0 -> 223.0	116158	20.35	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

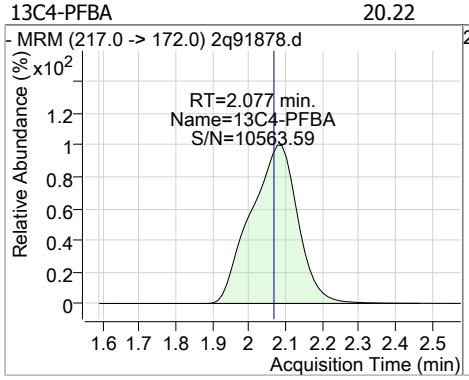
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C6-PFDA	8.277	519.0 -> 474.0	481935	21.04 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C7-PFUnDA	8.741	570.0 -> 525.0	591534	20.60 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C8-FOSA	7.659	506.0 -> 78.0	100422	22.47 µg/L		0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.3%		
13C8-PFOA	7.184	421.0 -> 376.0	346953	20.94 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C8-PFOS	7.749	507.0 -> 99.0	25819	20.31 µg/L		0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C9-PFNA	7.777	472.0 -> 427.0	383789	20.83 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%		
d3-MeFOSAA	8.107	573.0 -> 419.0	98877	19.96 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C3-HFPO-DA	5.843	287.0 -> 169.0	6224	18.27 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%		
d3-MeFOSA	8.036	515.0 -> 169.0	36839	22.12 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.6%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	6.482	363.0 -> 319.0	0	0.00 µg/L	m	1
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	-	313.0 -> 269.0	-	N.D.		
PFHxS	-	399.0 -> 80.0	-	N.D.		
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	7.185	413.0 -> 369.0	282309	15.06 µg/L	m	96
PFOS	-	499.0 -> 80.0	-	N.D.		
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		
MeFOSA	-	512.0 -> 219.0	-	N.D.		

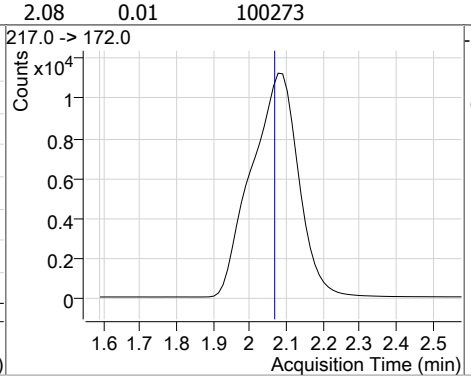
= Qualifier out of range, m = manually integrated, + = Area summed

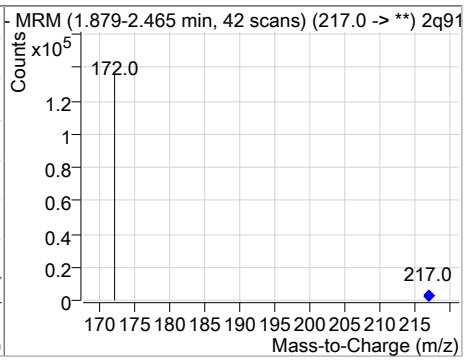
Perfluorinated Compounds by LC/MS/MS



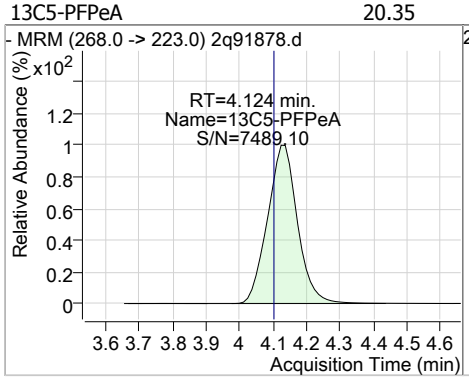
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.22	2.08	0.01	100273				

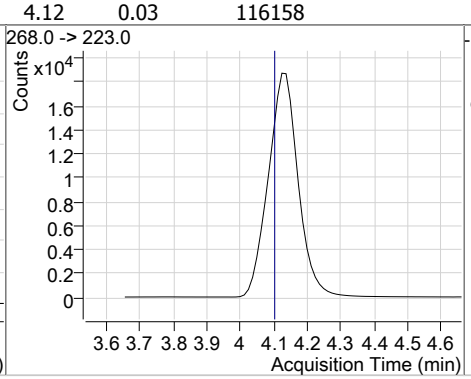


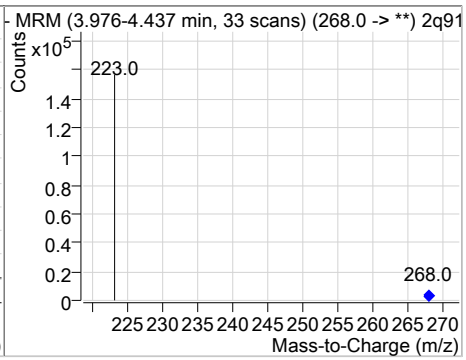




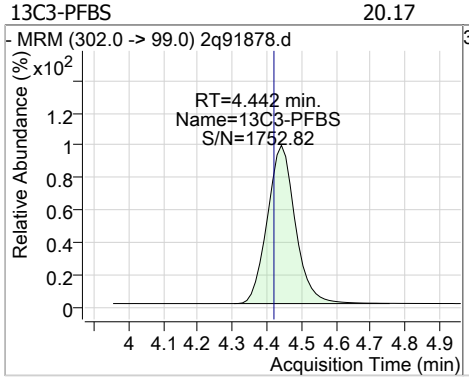
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.35	4.12	0.03	116158				

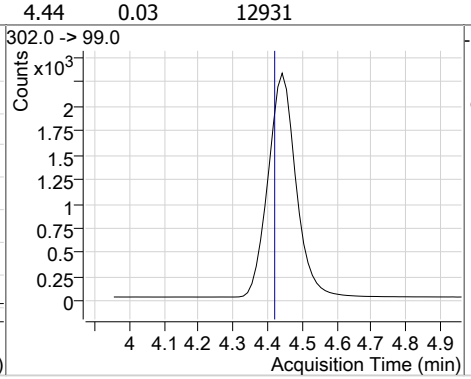


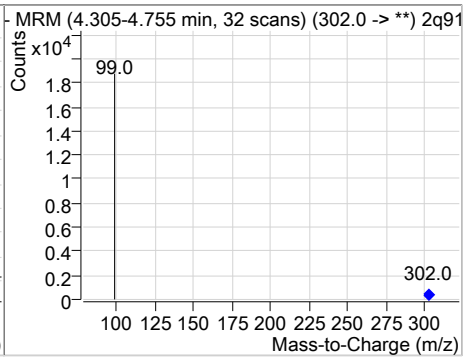




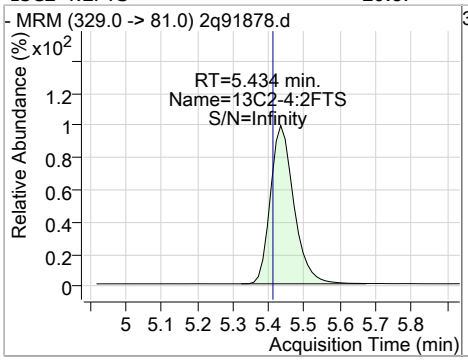
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13C3-PFBS	20.17	4.44	0.03	12931				

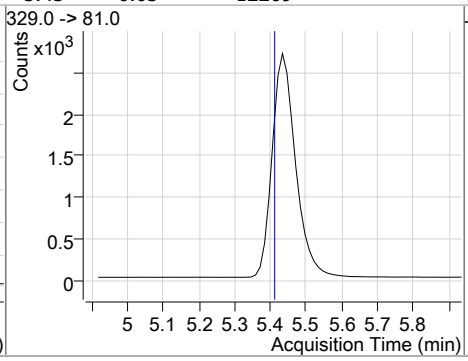


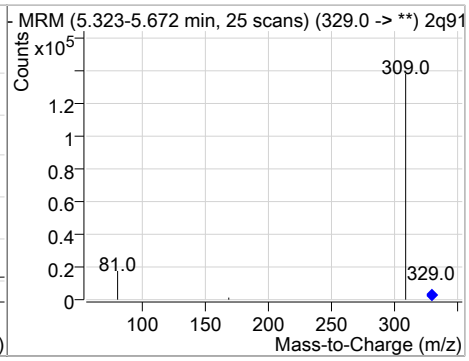




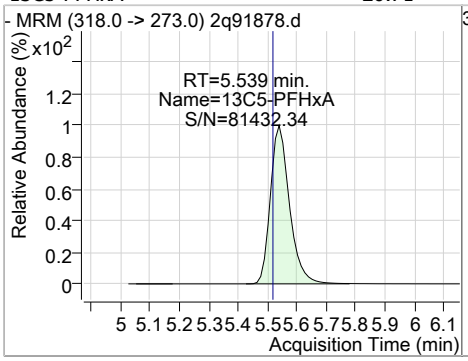
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13C2-4:2FTS	20.87	5.43	0.03	12269				

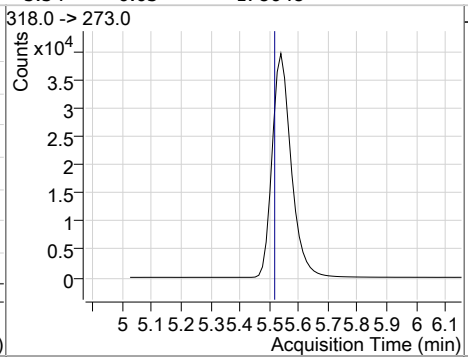


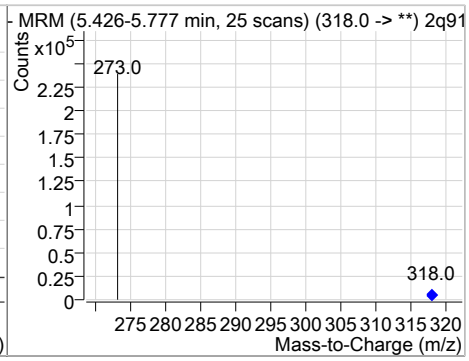




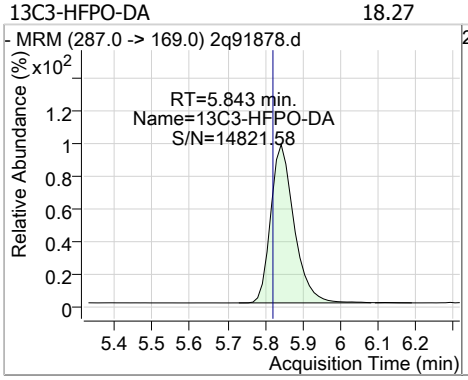
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.71	5.54	0.03	178648				

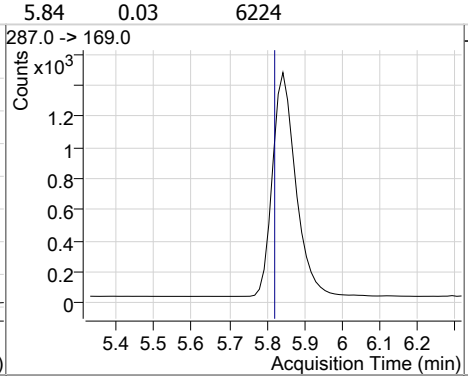


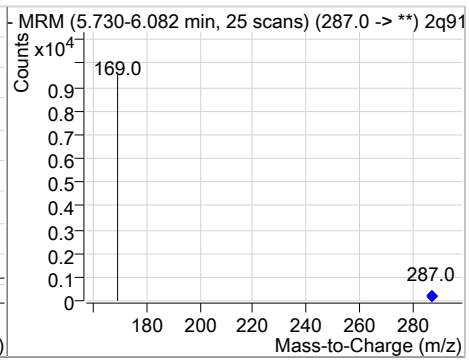




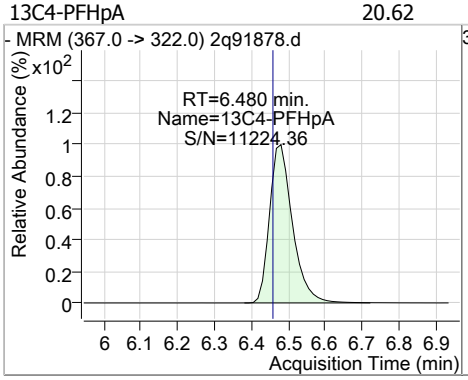
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.27	5.84	0.03	6224				

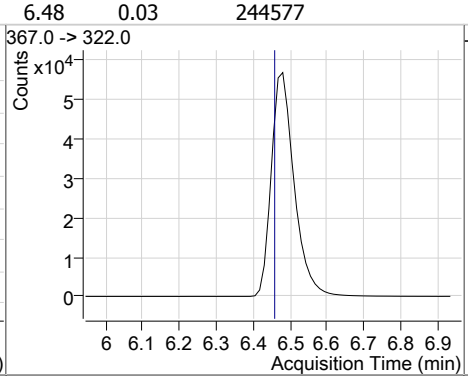


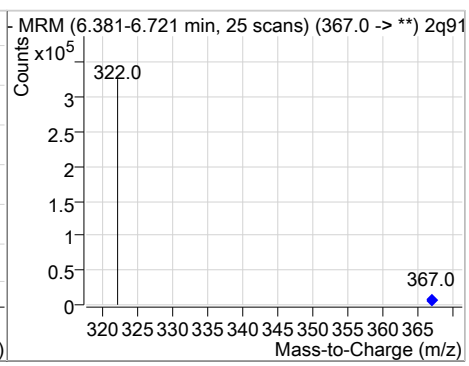




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.62	6.48	0.03	244577				

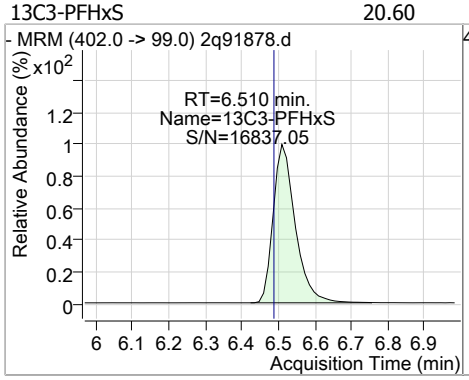


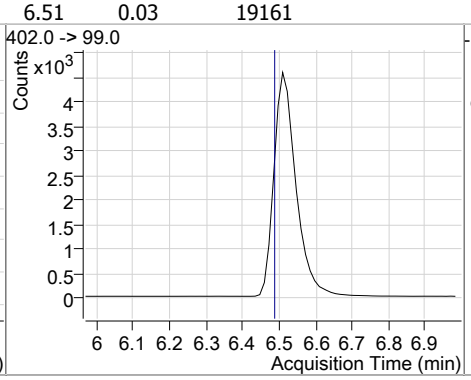


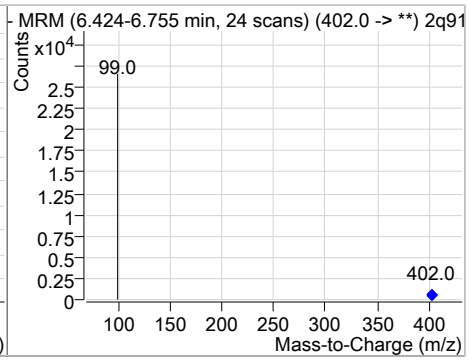


Perfluorinated Compounds by LC/MS/MS

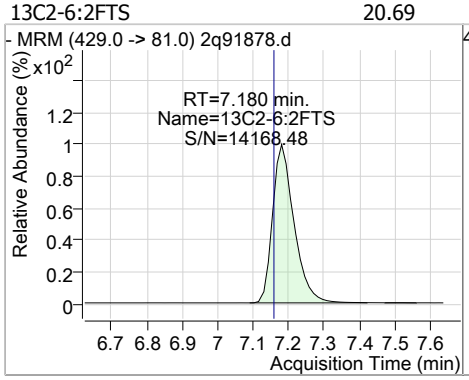
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.60	6.51	0.03	19161				

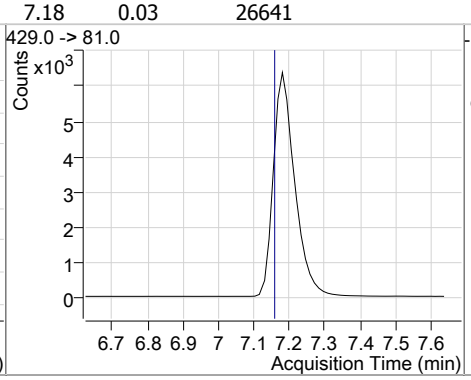


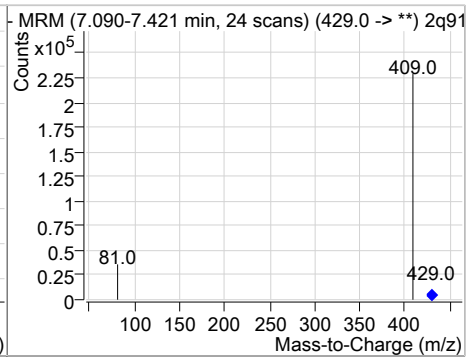




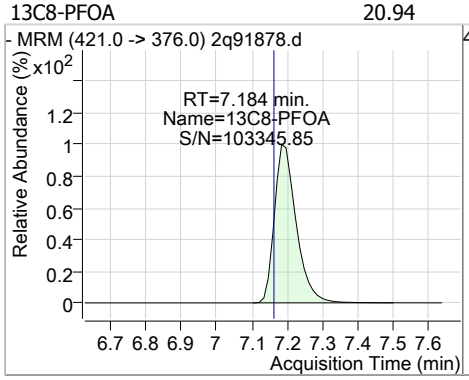
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.69	7.18	0.03	26641				

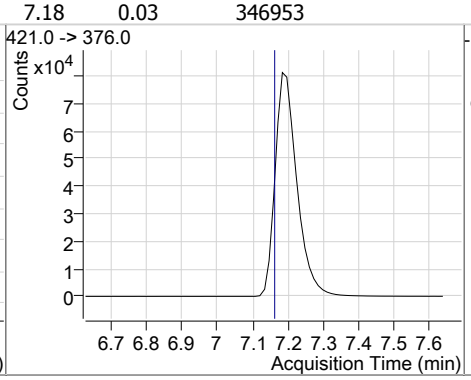


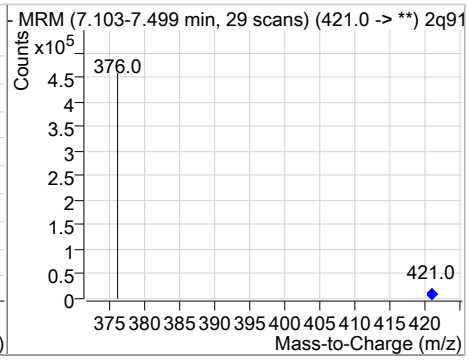




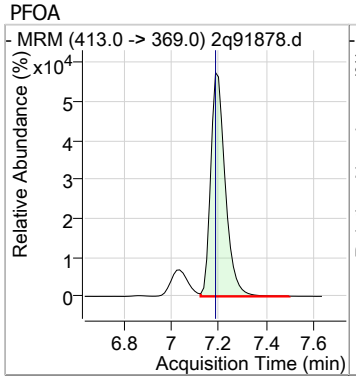
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.94	7.18	0.03	346953				

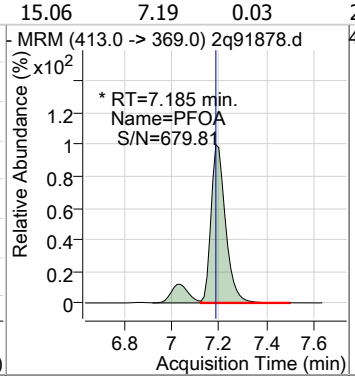


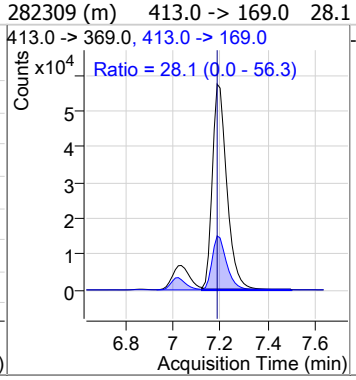


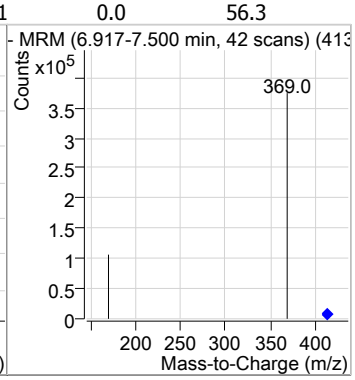


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	15.06	7.19	0.03	282309 (m)	413.0 -> 169.0	28.1	0.0	56.3

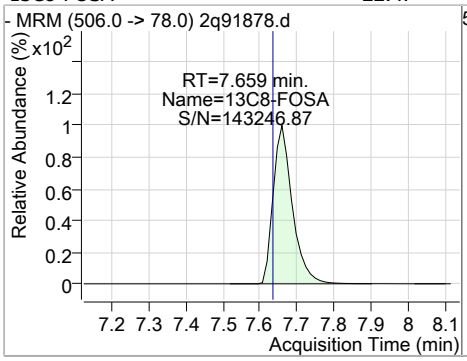


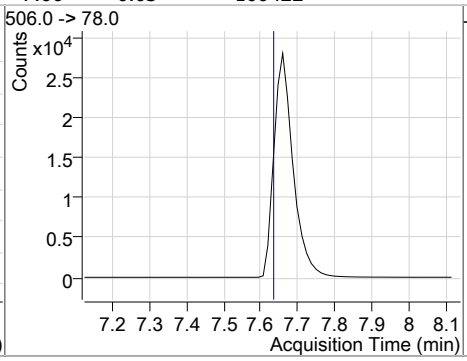


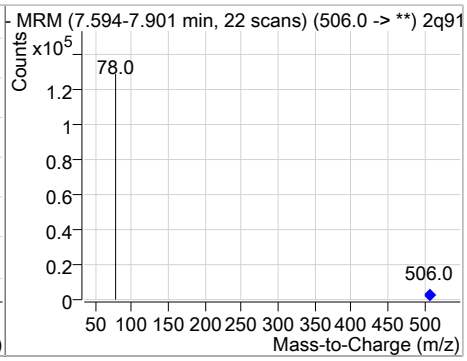




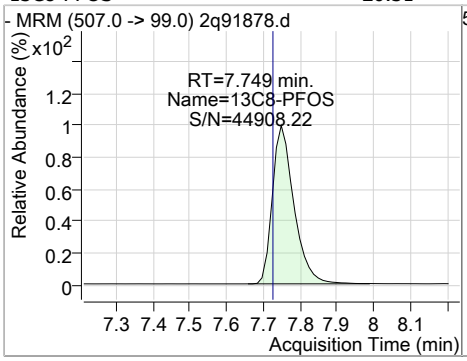
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.47	7.66	0.03	100422				

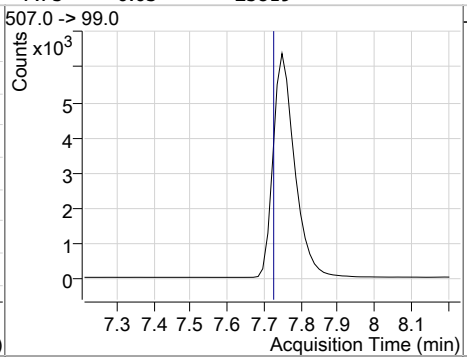


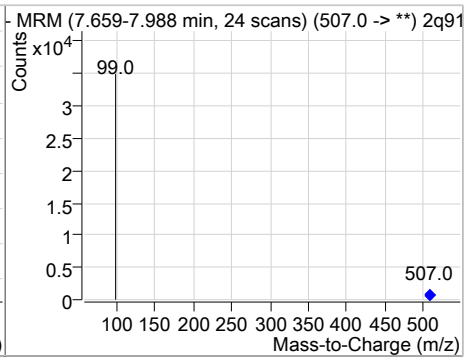




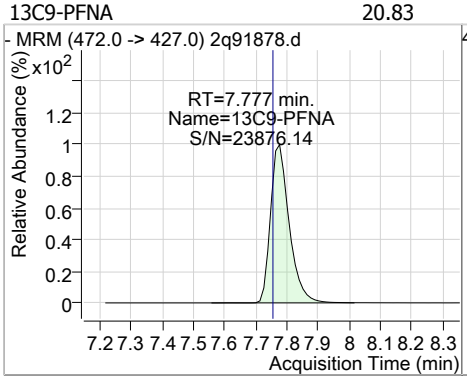
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.31	7.75	0.03	25819				

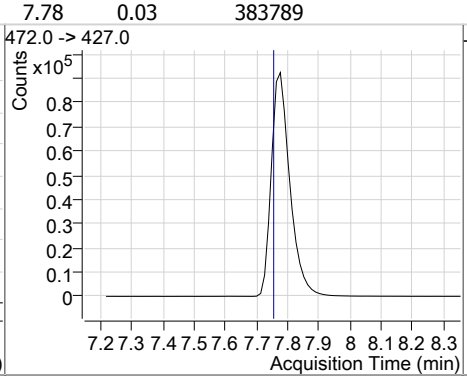


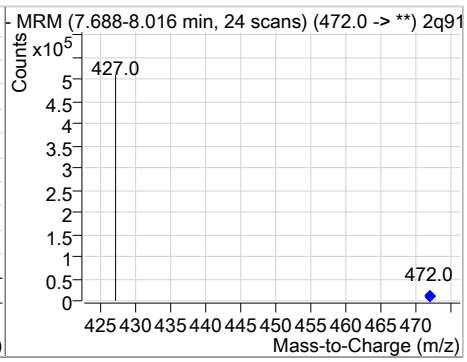




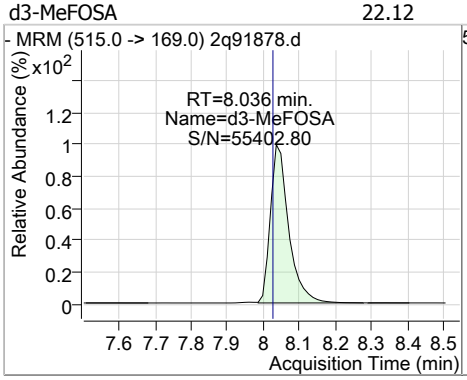
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.83	7.78	0.03	383789				

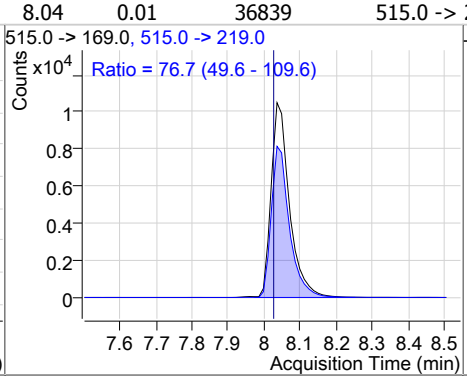


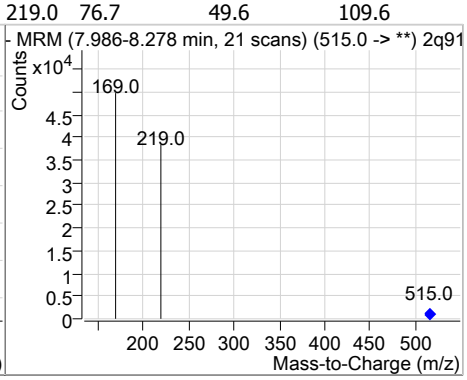




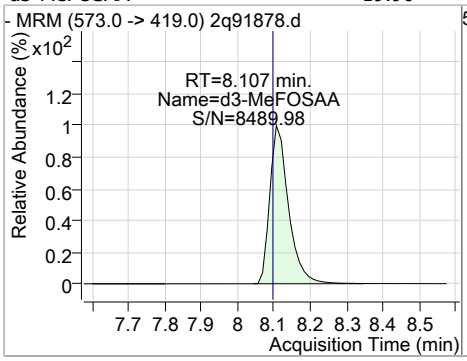
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	22.12	8.04	0.01	36839	515.0 -> 219.0	76.7	49.6	109.6

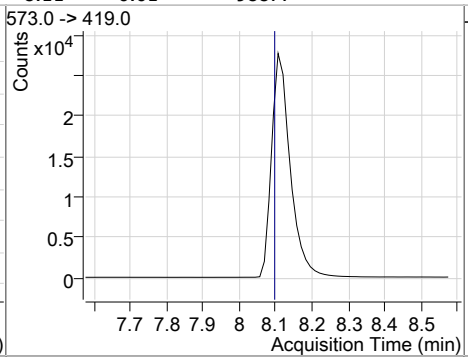


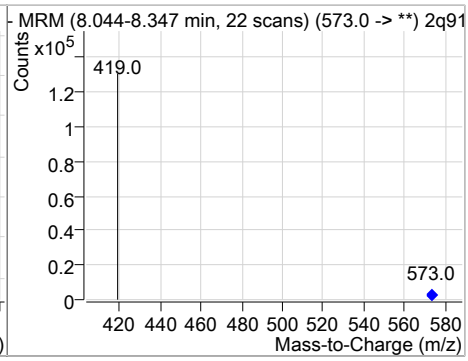




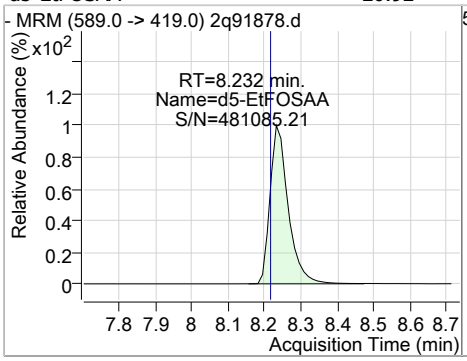
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.96	8.11	0.01	98877				

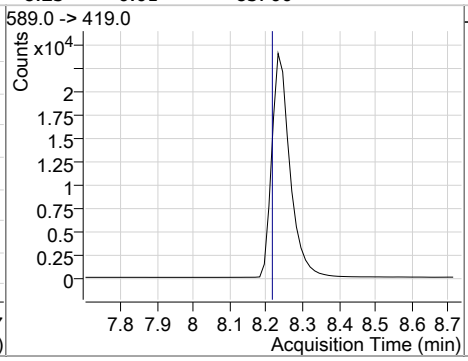


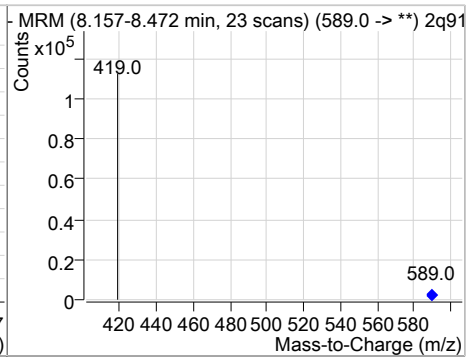




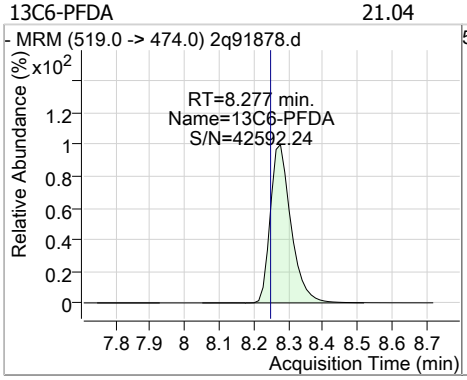
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	20.92	8.23	0.01	83700				

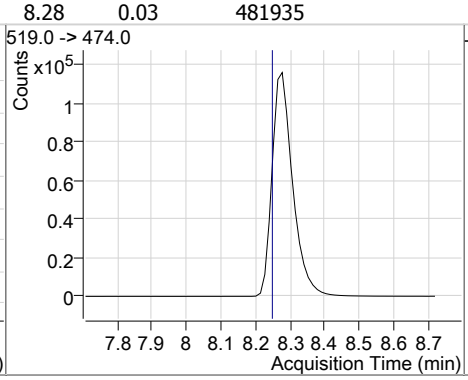


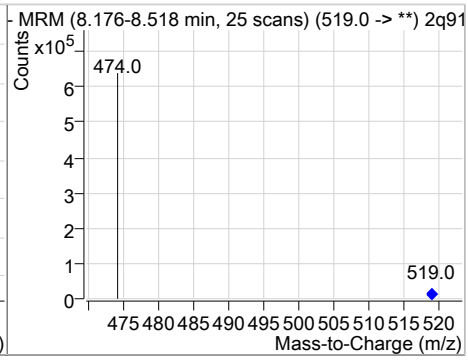




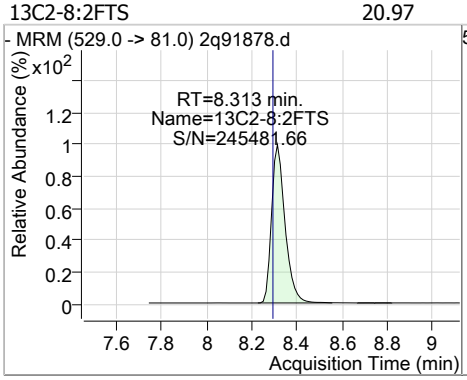
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.04	8.28	0.03	481935				

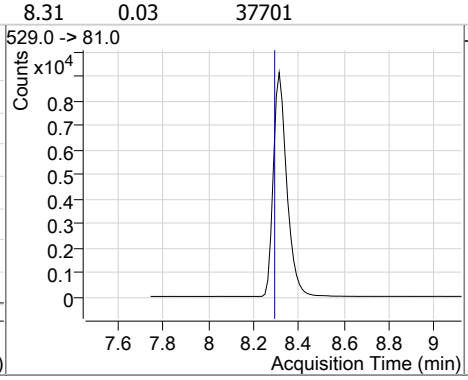


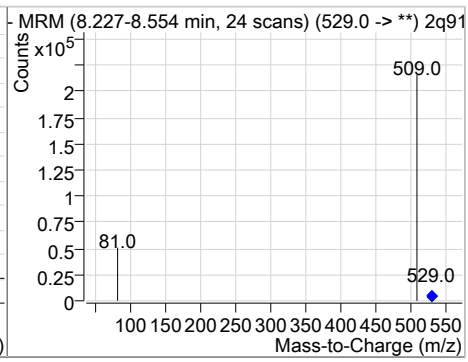




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.97	8.31	0.03	37701				

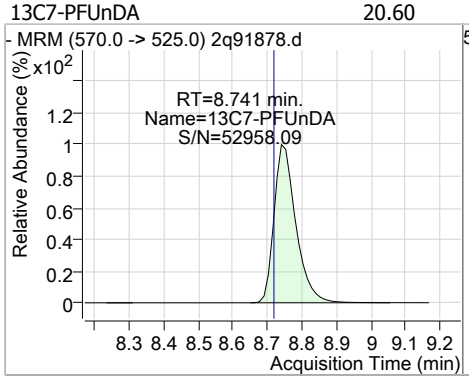


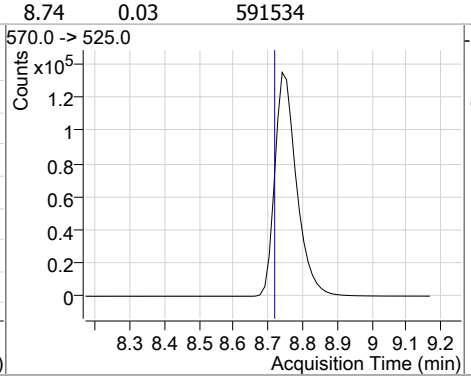


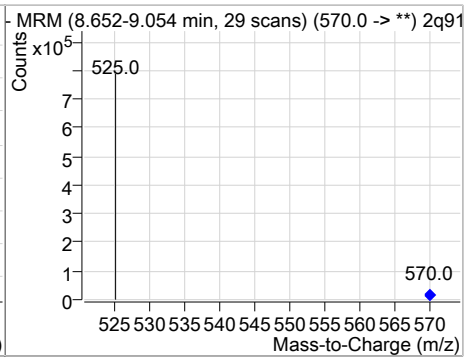


Perfluorinated Compounds by LC/MS/MS

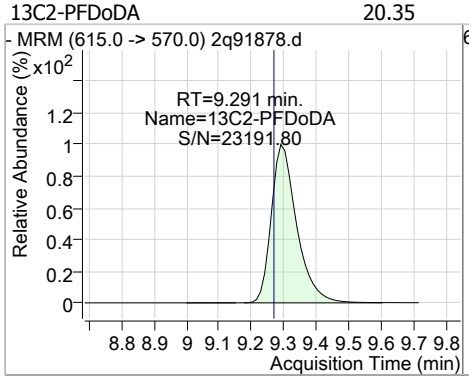
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.60	8.74	0.03	591534				

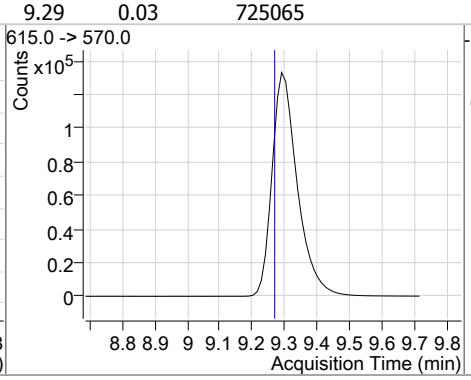


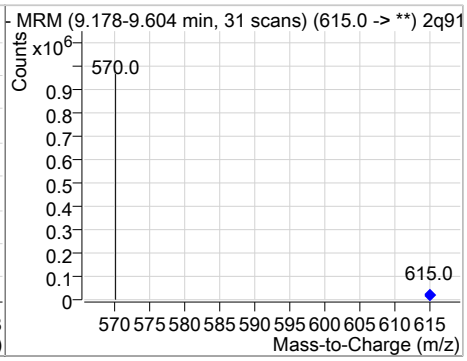




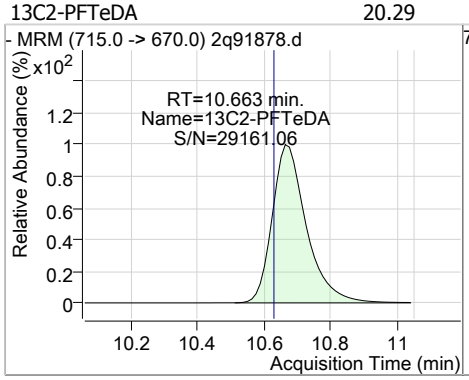
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.35	9.29	0.03	725065				

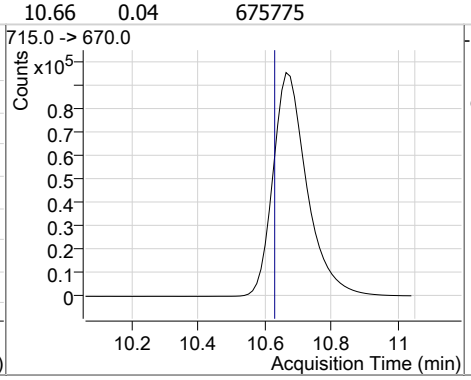


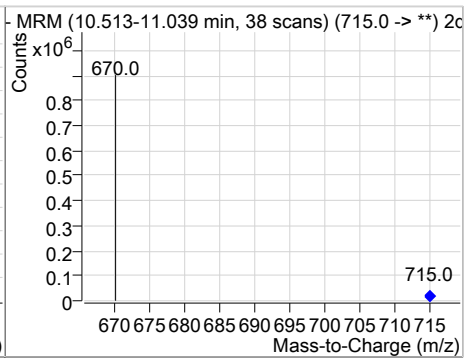




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.29	10.66	0.04	675775				







Manual Integration Approval Summary

Sample Number: S2Q1286-RT
Lab FileID: 2Q91878.D
Injection Time: 05/26/22 19:15
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/27/22 10:24 James Boone
Supervisor approved: 05/29/22 17:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.18	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92303.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 10:59:03 AM
Sample Name : RT
Vial : P1-B2
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

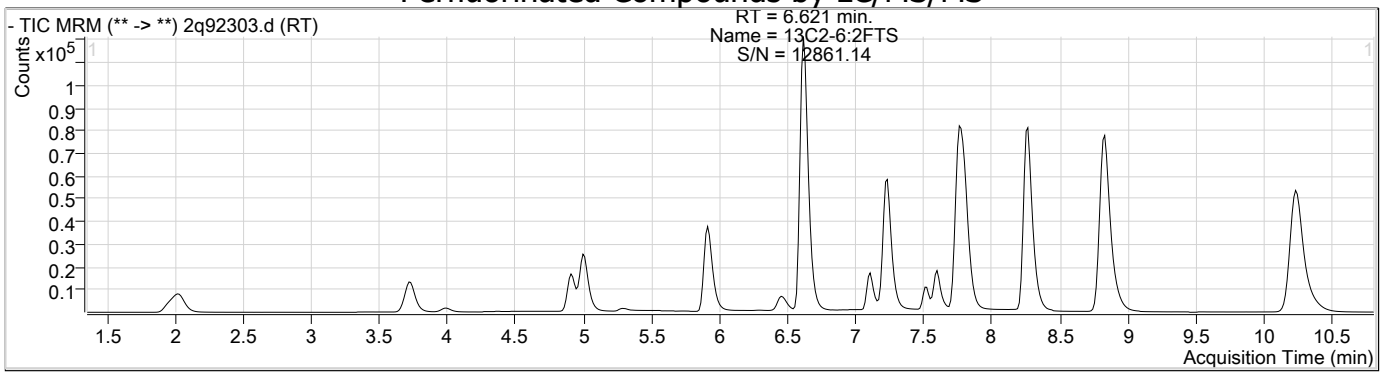
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	48725	20.00	µg/L	-0.025
M4-PFBA	2.014	217.0 -> 172.0	64720	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	72484	20.00	µg/L	-0.013
M5-PFHxA	5.002	318.0 -> 273.0	107347	20.00	µg/L	-0.025
M4-PFHpA	5.916	367.0 -> 322.0	155249	20.00	µg/L	-0.013
M8-PFOA	6.624	421.0 -> 376.0	207497	20.00	µg/L	-0.025
M9-PFNA	7.239	472.0 -> 427.0	236683	20.00	µg/L	-0.013
M6-PFDA	7.766	519.0 -> 474.0	301230	20.00	µg/L	-0.013
M7-PFUnDA	8.269	570.0 -> 525.0	375425	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	448834	20.00	µg/L	0.014
M2-PFTeDA	10.230	715.0 -> 670.0	395602	20.00	µg/L	0.025
M8-FOSA	7.111	506.0 -> 78.0	58544	20.00	µg/L	-0.038
M3-PFBS	3.992	302.0 -> 99.0	8747	20.00	µg/L	-0.013
M3-PFHxS	5.948	402.0 -> 99.0	12273	20.00	µg/L	-0.019
M8-PFOS	7.212	507.0 -> 99.0	17593	20.00	µg/L	-0.013
M2-4:2FTS	4.909	329.0 -> 81.0	7966	20.00	µg/L	-0.025
M2-6:2FTS	6.621	429.0 -> 81.0	16343	20.00	µg/L	-0.013
M2-8:2FTS	7.803	529.0 -> 81.0	23956	20.00	µg/L	-0.013
M3-MeFOSAA	7.598	573.0 -> 419.0	58302	20.00	µg/L	-0.025
M3-HFPO-DA	5.294	287.0 -> 169.0	4938	20.00	µg/L	-0.025
M3-MeFOSA	7.514	515.0 -> 169.0	19726	20.00	µg/L	-0.038
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	7966	17.12	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.6%		
13C2-6:2FTS	6.621	429.0 -> 81.0	16343	15.80	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.0%		
13C2-8:2FTS	7.803	529.0 -> 81.0	23956	16.18	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.9%		
13C2-PFDoDA	8.832	615.0 -> 570.0	448834	16.62	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.1%		
13C2-PFTeDA	10.230	715.0 -> 670.0	395602	15.89	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C3-PFBS	3.992	302.0 -> 99.0	8747	17.20	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.0%		
13C3-PFHxS	5.948	402.0 -> 99.0	12273	17.22	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.1%		
13C4-PFBA	2.014	217.0 -> 172.0	64720	16.75	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%		
13C4-PFHpA	5.916	367.0 -> 322.0	155249	16.72	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.6%		
d5-EtFOSAA	7.735	589.0 -> 419.0	48725	16.05	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.3%		
13C5-PFHxA	5.002	318.0 -> 273.0	107347	15.90	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C5-PFPeA	3.724	268.0 -> 223.0	72484	15.90	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

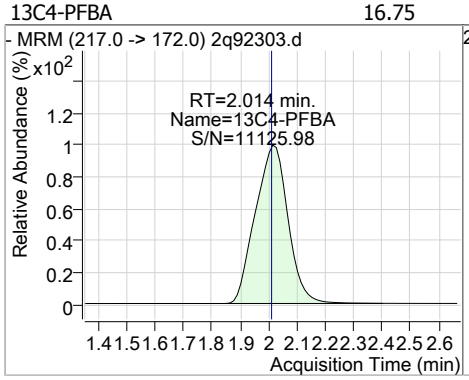
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%			
13C6-PFDA	7.766	519.0 -> 474.0	301230	16.54	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%			
13C7-PFUnDA	8.269	570.0 -> 525.0	375425	16.59	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.0%			
13C8-FOSA	7.111	506.0 -> 78.0	58544	15.91	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%			
13C8-PFOA	6.624	421.0 -> 376.0	207497	16.12	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.6%			
13C8-PFOS	7.212	507.0 -> 99.0	17593	16.95	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%			
13C9-PFNA	7.239	472.0 -> 427.0	236683	16.23	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.1%			
d3-MeFOSAA	7.598	573.0 -> 419.0	58302	15.20	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.0%			
13C3-HFPO-DA	5.294	287.0 -> 169.0	4938	18.96	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%			
d3-MeFOSA	7.514	515.0 -> 169.0	19726	14.09	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.5%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	-	213.0 -> 169.0	-	N.D.			
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	-	313.0 -> 269.0	-	N.D.			
PFHxS	-	399.0 -> 80.0	-	N.D.			
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.624	413.0 -> 369.0	174825	15.51	µg/L	m	94
PFOS	-	499.0 -> 80.0	-	N.D.			
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

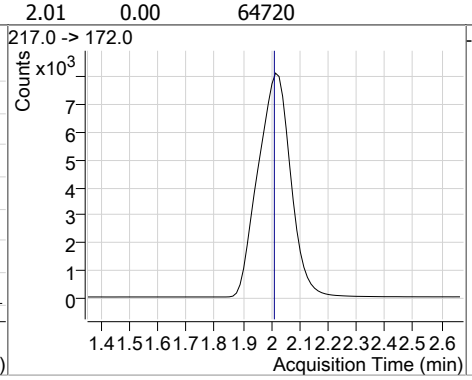
= Qualifier out of range, m = manually integrated, + = Area summed

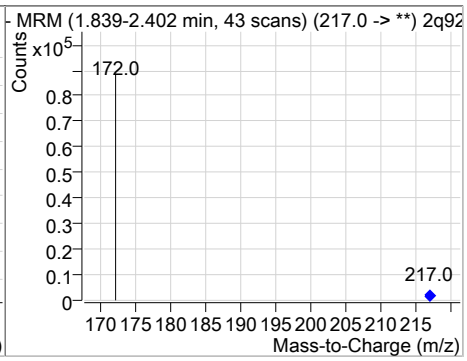
Perfluorinated Compounds by LC/MS/MS



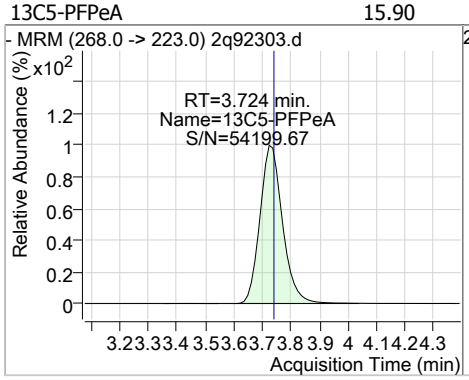
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.75	2.01	0.00	64720				

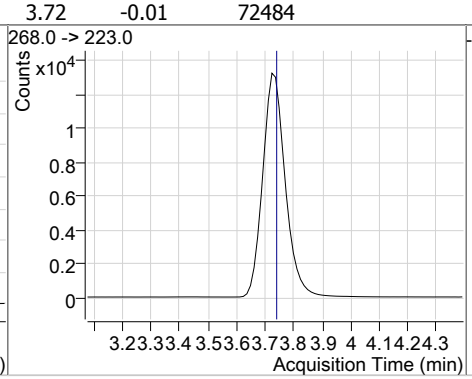


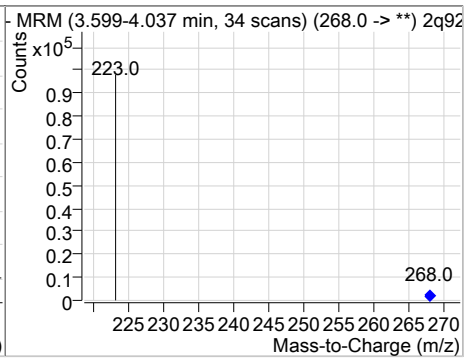




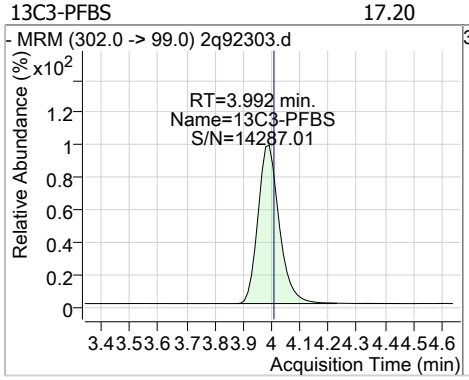
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.90	3.72	-0.01	72484				

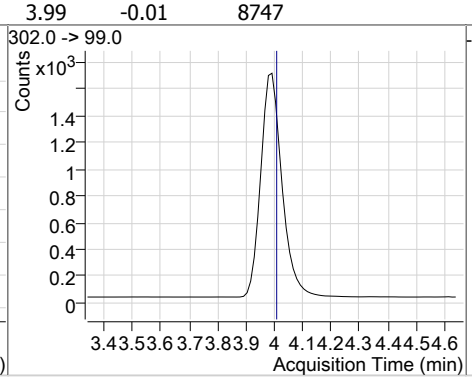


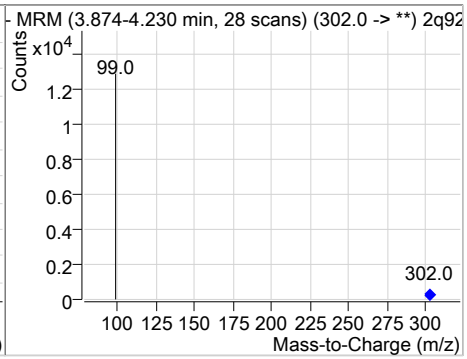




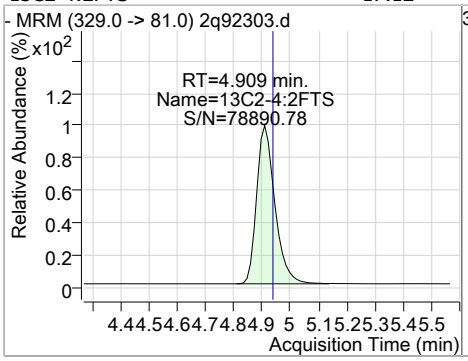
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.20	3.99	-0.01	8747				

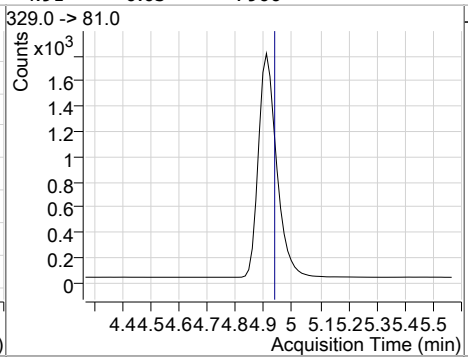


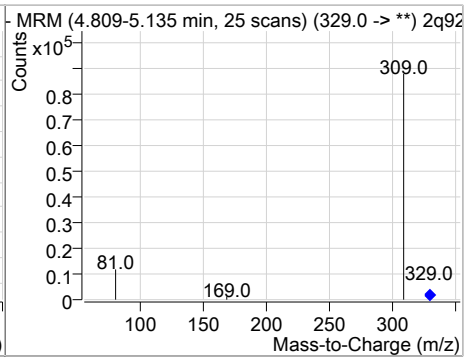




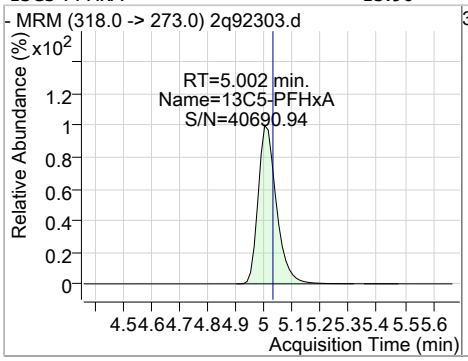
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.12	4.91	-0.03	7966				

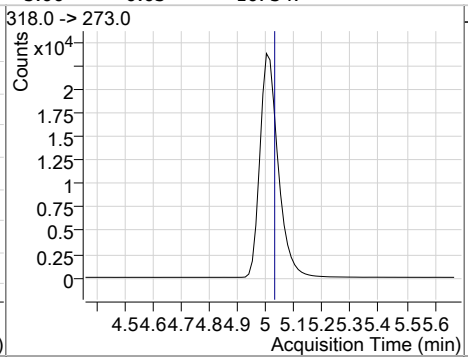


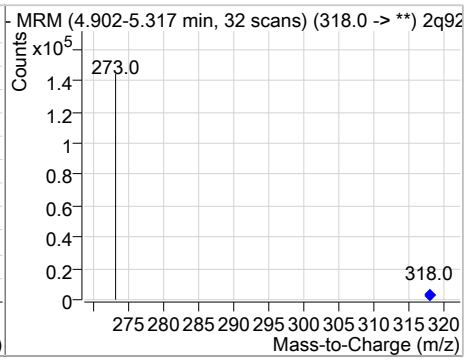




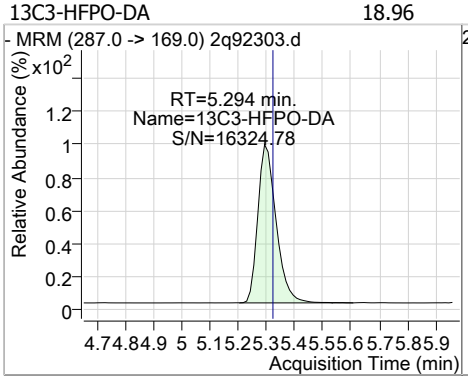
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.90	5.00	-0.03	107347				

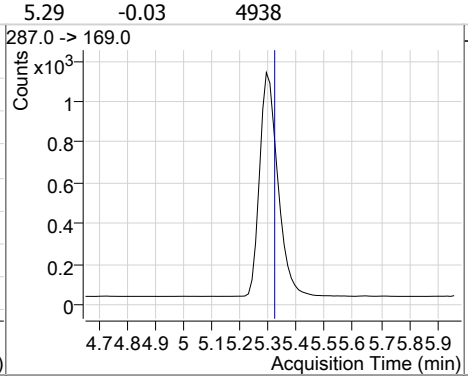


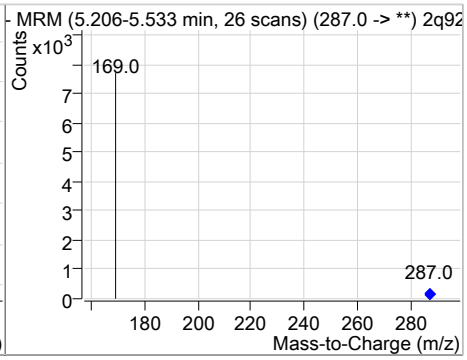




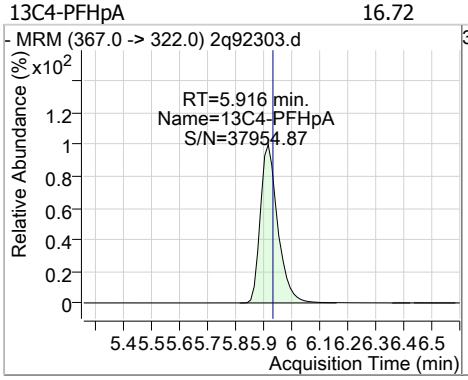
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.96	5.29	-0.03	4938				

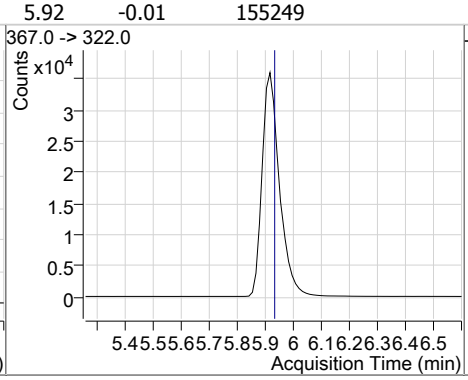


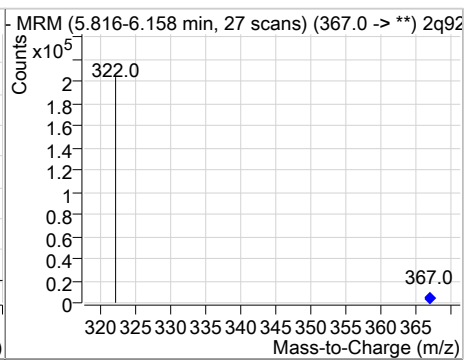




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.72	5.92	-0.01	155249				

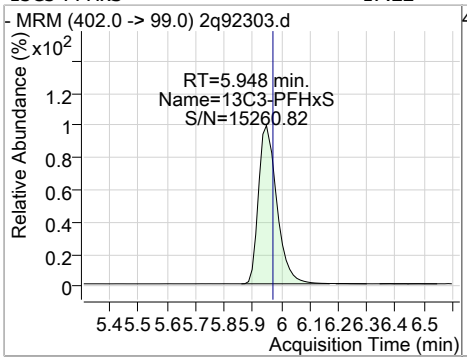


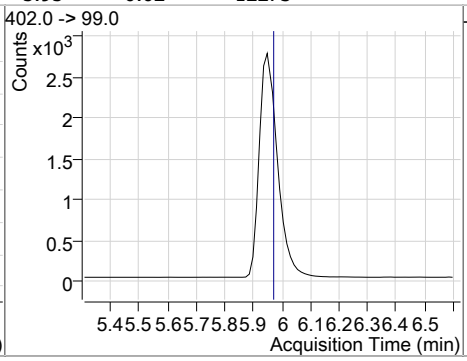


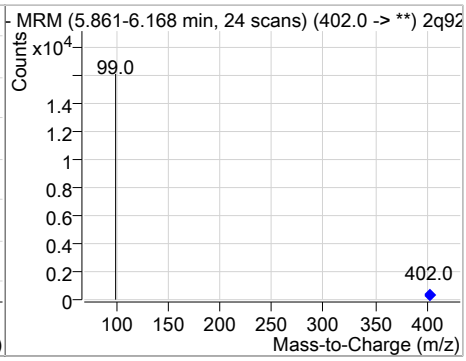


Perfluorinated Compounds by LC/MS/MS

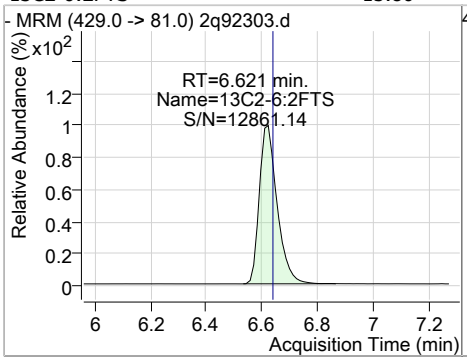
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.22	5.95	-0.02	12273				

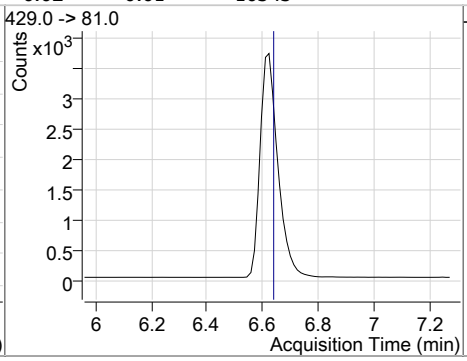


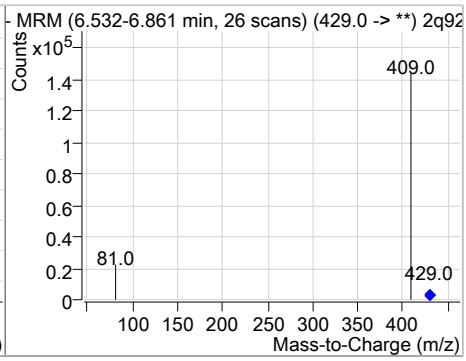




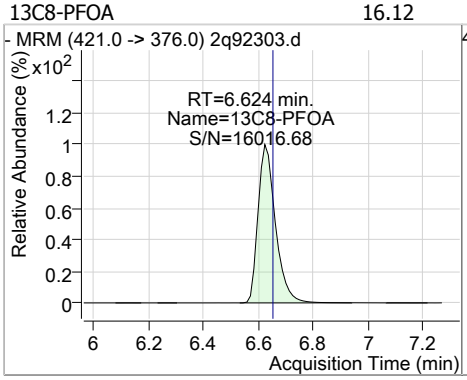
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.80	6.62	-0.01	16343				

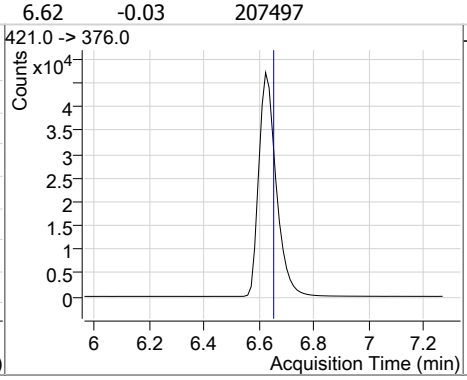


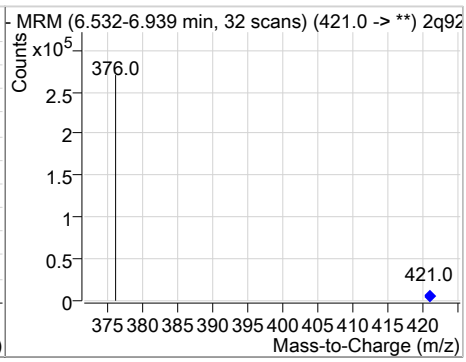




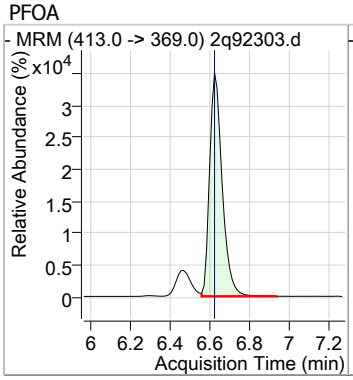
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.12	6.62	-0.03	207497				

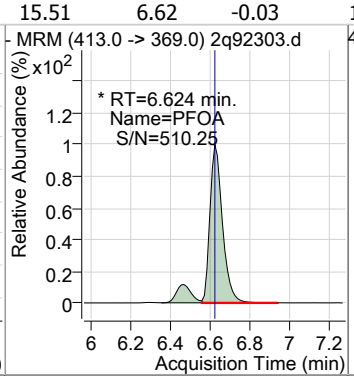


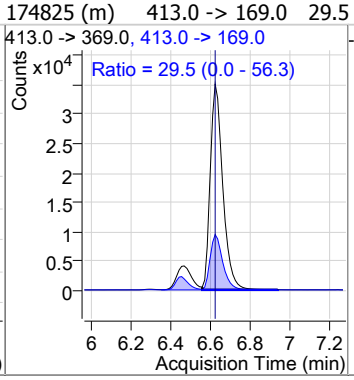


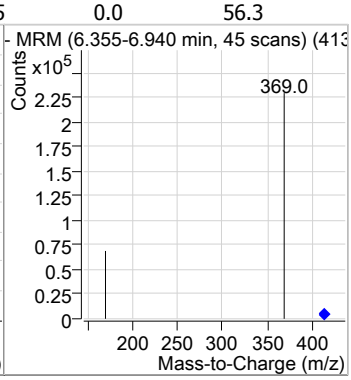


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	15.51	6.62	-0.03	174825 (m)	413.0 -> 169.0	29.5	0.0	56.3

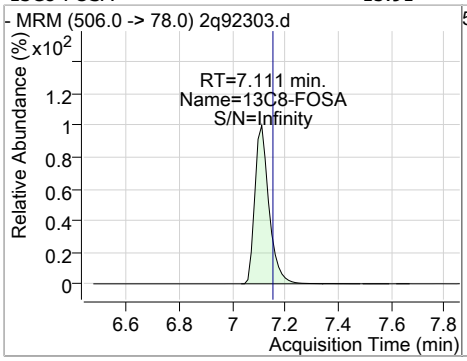


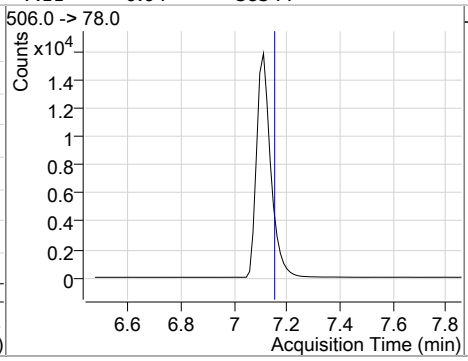


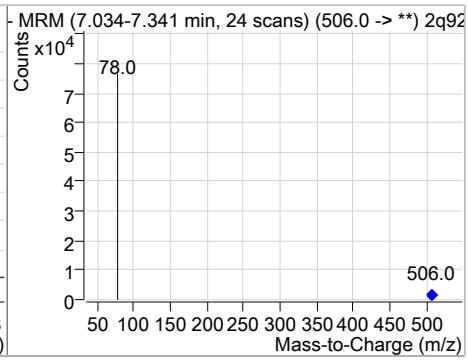




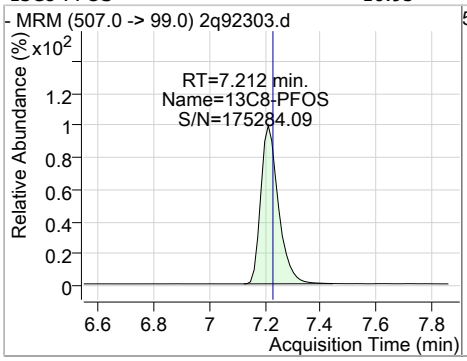
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.91	7.11	-0.04	58544				

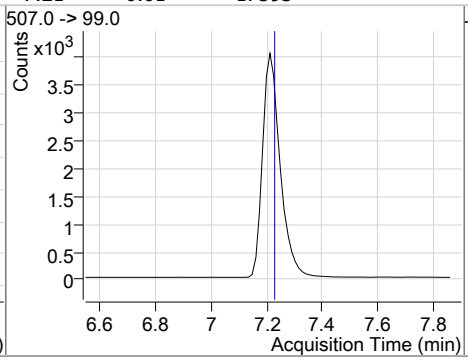


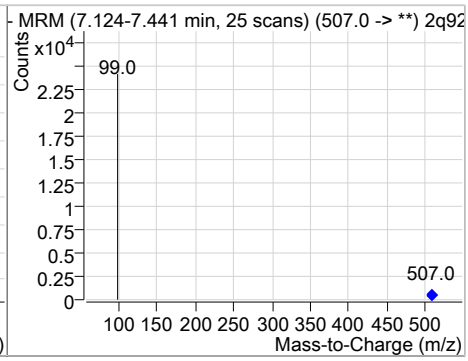




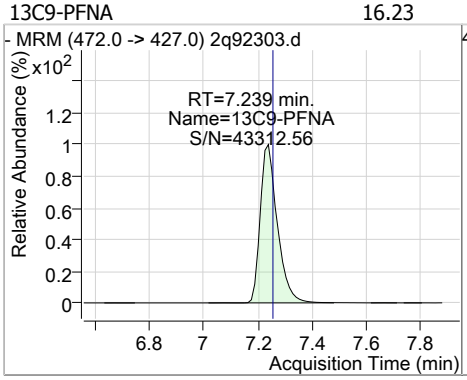
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.95	7.21	-0.01	17593				

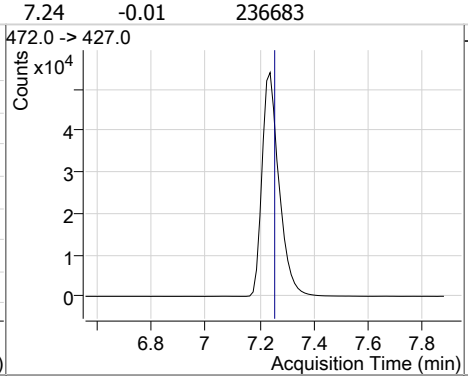


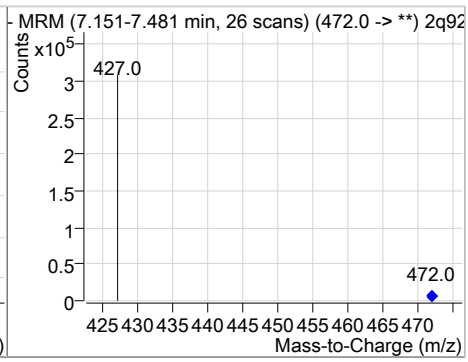




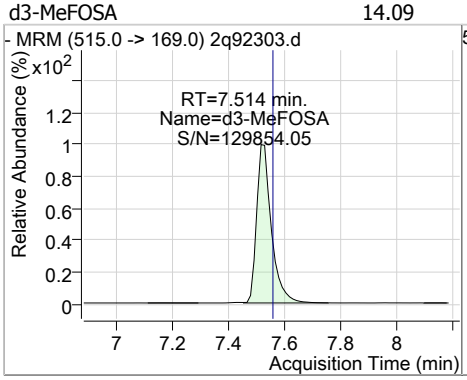
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13C9-PFNA	16.23	7.24	-0.01	236683				

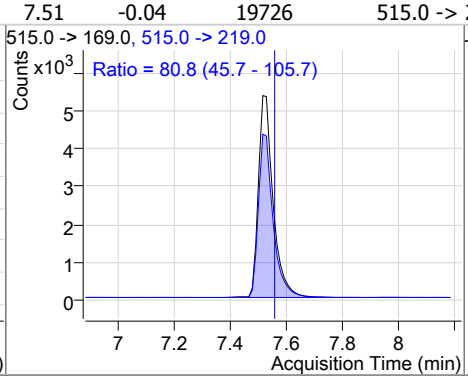


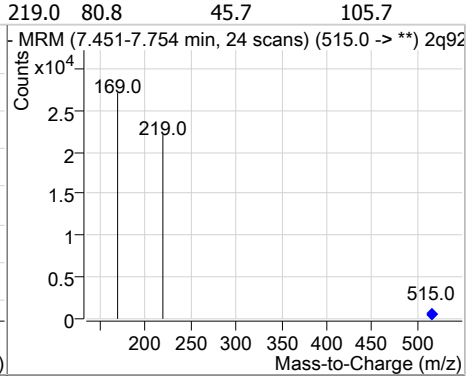




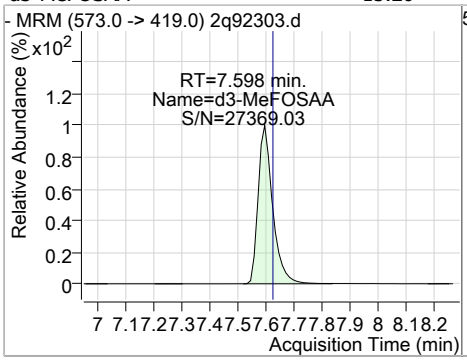
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	14.09	7.51	-0.04	19726	515.0 -> 219.0	80.8	45.7	105.7

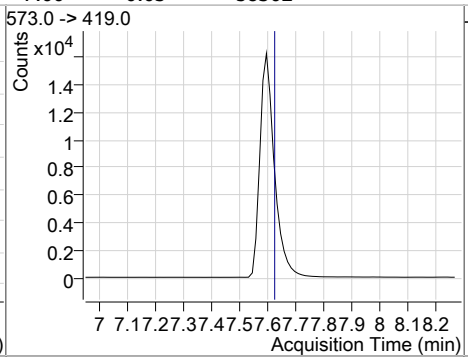


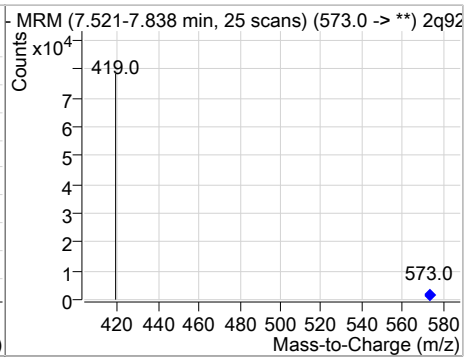




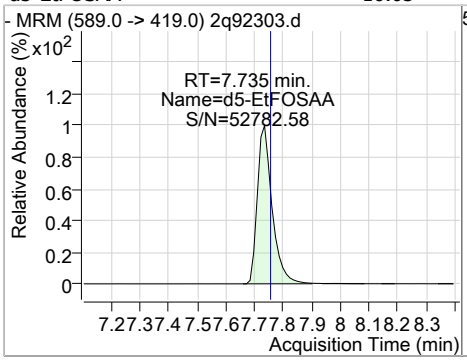
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d3-MeFOSAA	15.20	7.60	-0.03	58302				

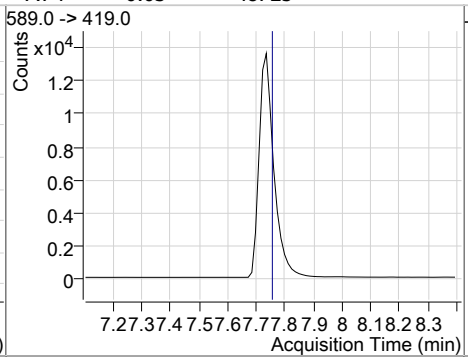


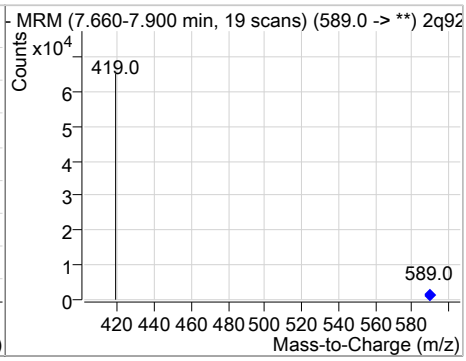




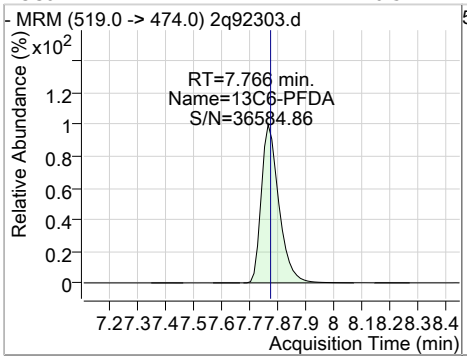
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	16.05	7.74	-0.03	48725				

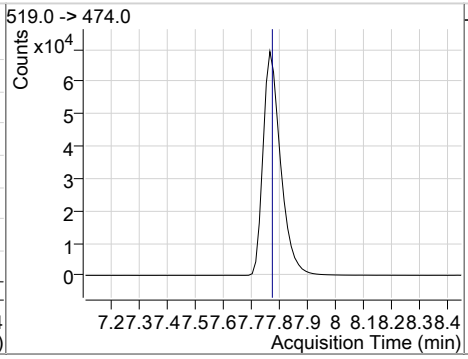


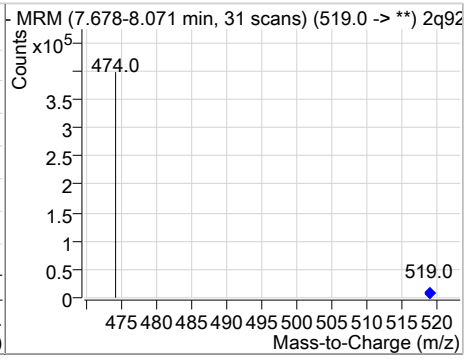




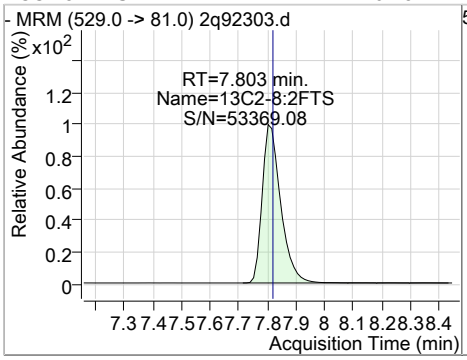
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.54	7.77	-0.01	301230				

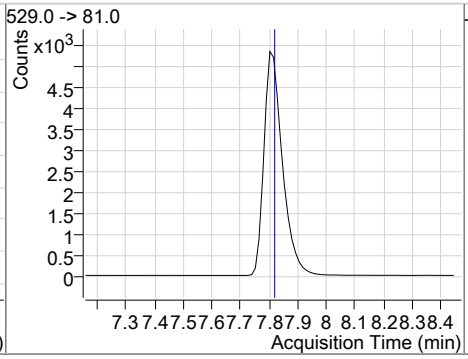


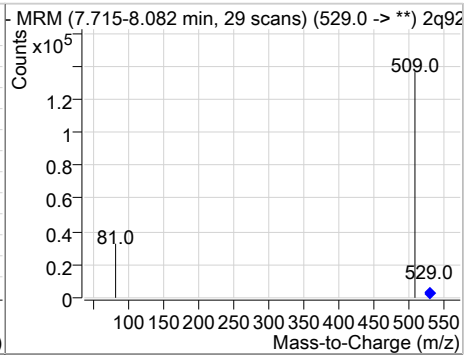




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.18	7.80	-0.01	23956				

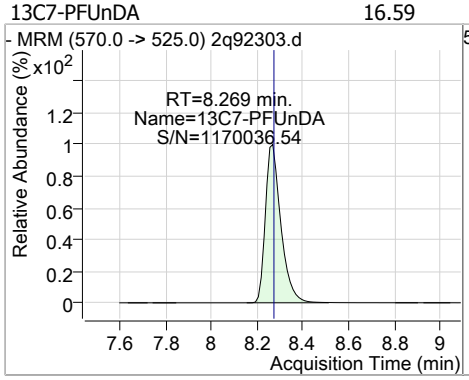


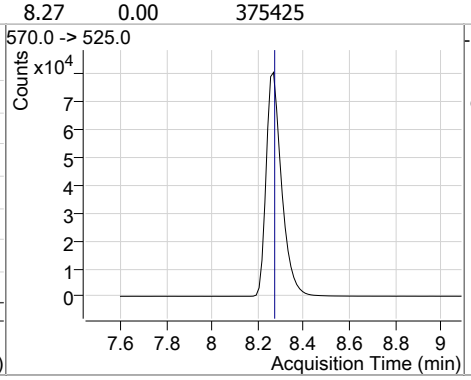


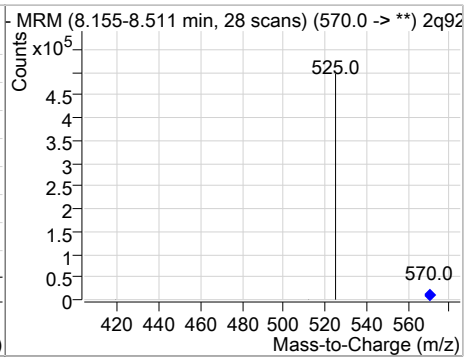


Perfluorinated Compounds by LC/MS/MS

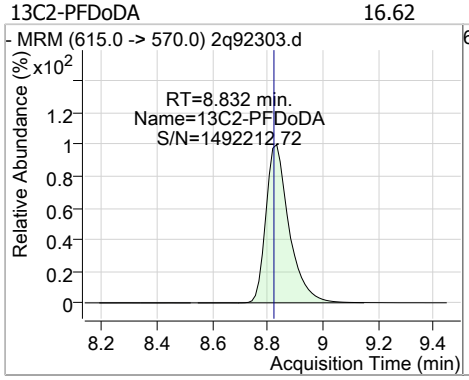
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.59	8.27	0.00	375425				

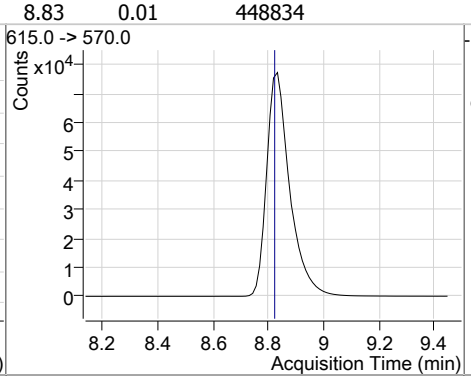


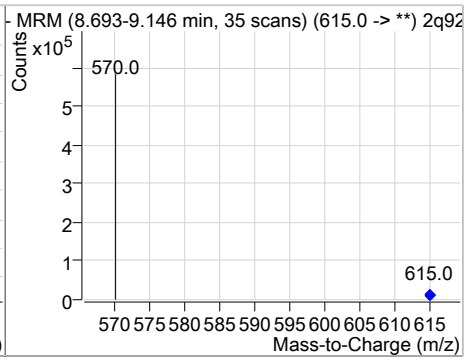




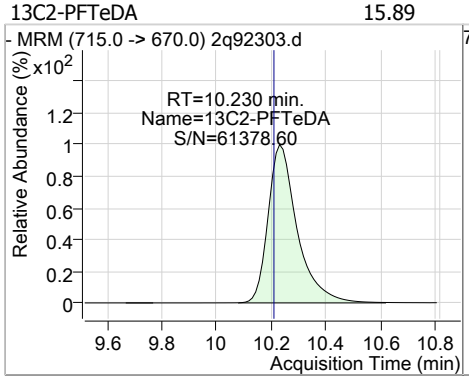
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.62	8.83	0.01	448834				

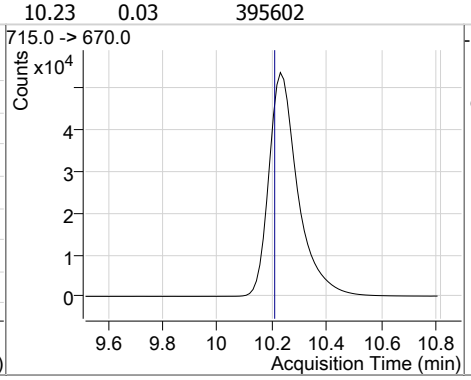


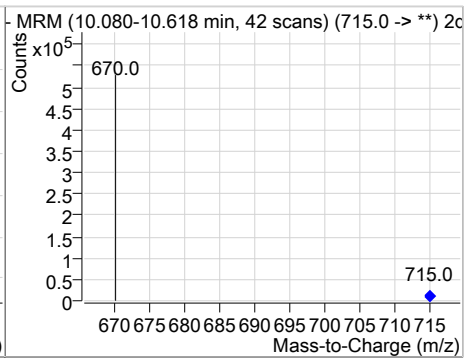




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.89	10.23	0.03	395602				







Manual Integration Approval Summary

Sample Number: S2Q1293-RT
Lab FileID: 2Q92303.D
Injection Time: 06/02/22 10:59
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.62	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:09

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92338.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 10:23:11 AM
Sample Name : RT
Vial : P1-B2
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

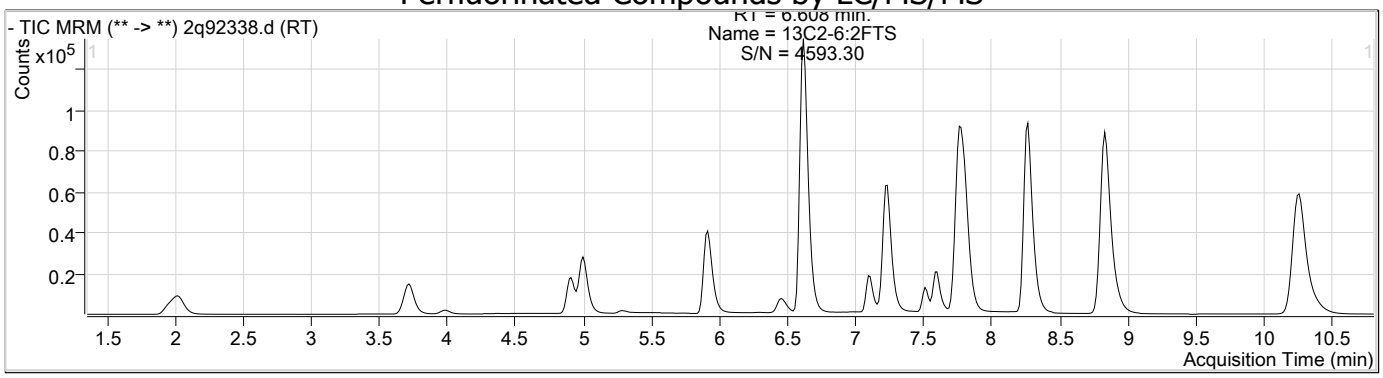
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.723	589.0 -> 419.0	58183	20.00	µg/L	-0.038
M4-PFBA	2.014	217.0 -> 172.0	71988	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	80495	20.00	µg/L	-0.013
M5-PFHxA	5.002	318.0 -> 273.0	118347	20.00	µg/L	-0.025
M4-PFHpA	5.916	367.0 -> 322.0	170795	20.00	µg/L	-0.013
M8-PFOA	6.624	421.0 -> 376.0	231639	20.00	µg/L	-0.025
M9-PFNA	7.239	472.0 -> 427.0	261272	20.00	µg/L	-0.013
M6-PFDA	7.766	519.0 -> 474.0	342930	20.00	µg/L	-0.013
M7-PFUnDA	8.268	570.0 -> 525.0	432976	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	510435	20.00	µg/L	0.014
M2-PFTeDA	10.255	715.0 -> 670.0	441762	20.00	µg/L	0.050
M8-FOSA	7.097	506.0 -> 78.0	66817	20.00	µg/L	-0.052
M3-PFBS	3.979	302.0 -> 99.0	9528	20.00	µg/L	-0.025
M3-PFHxS	5.948	402.0 -> 99.0	13535	20.00	µg/L	-0.019
M8-PFOS	7.212	507.0 -> 99.0	19704	20.00	µg/L	-0.013
M2-4:2FTS	4.909	329.0 -> 81.0	8443	20.00	µg/L	-0.025
M2-6:2FTS	6.608	429.0 -> 81.0	18186	20.00	µg/L	-0.025
M2-8:2FTS	7.803	529.0 -> 81.0	26003	20.00	µg/L	-0.013
M3-MeFOSAA	7.598	573.0 -> 419.0	69382	20.00	µg/L	-0.025
M3-HFPO-DA	5.294	287.0 -> 169.0	5259	20.00	µg/L	-0.025
M3-MeFOSA	7.514	515.0 -> 169.0	23161	20.00	µg/L	-0.038
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	8443	18.15	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
13C2-6:2FTS	6.608	429.0 -> 81.0	18186	17.58	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C2-8:2FTS	7.803	529.0 -> 81.0	26003	17.56	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C2-PFDoDA	8.832	615.0 -> 570.0	510435	18.90	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
13C2-PFTeDA	10.255	715.0 -> 670.0	441762	17.75	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C3-PFBS	3.979	302.0 -> 99.0	9528	18.73	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.7%		
13C3-PFHxS	5.948	402.0 -> 99.0	13535	18.98	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.9%		
13C4-PFBA	2.014	217.0 -> 172.0	71988	18.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.2%		
13C4-PFHpA	5.916	367.0 -> 322.0	170795	18.40	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.0%		
d5-EtFOSAA	7.723	589.0 -> 419.0	58183	19.17	ng/ml	-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%		
13C5-PFHxA	5.002	318.0 -> 273.0	118347	17.53	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.6%		
13C5-PFPeA	3.724	268.0 -> 223.0	80495	17.66	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

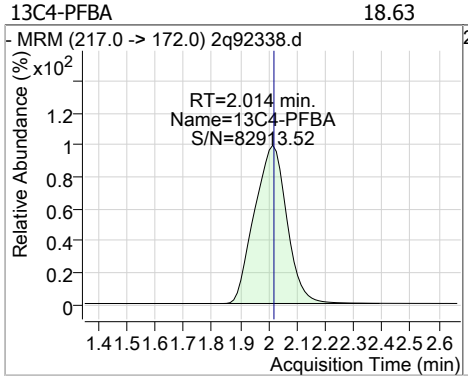
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.3%			
13C6-PFDA	7.766	519.0 -> 474.0	342930	18.83	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.1%			
13C7-PFUnDA	8.268	570.0 -> 525.0	432976	19.13	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%			
13C8-FOSA	7.097	506.0 -> 78.0	66817	18.16	µg/L		-0.052
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.8%			
13C8-PFOA	6.624	421.0 -> 376.0	231639	17.99	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.0%			
13C8-PFOS	7.212	507.0 -> 99.0	19704	18.99	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.9%			
13C9-PFNA	7.239	472.0 -> 427.0	261272	17.91	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.6%			
d3-MeFOSAA	7.598	573.0 -> 419.0	69382	18.09	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.5%			
13C3-HFPO-DA	5.294	287.0 -> 169.0	5259	20.19	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.0%			
d3-MeFOSA	7.514	515.0 -> 169.0	23161	16.55	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	-	213.0 -> 169.0	-	N.D.			
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	-	313.0 -> 269.0	-	N.D.			
PFHxS	-	399.0 -> 80.0	-	N.D.			
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.624	413.0 -> 369.0	194653	15.47	µg/L	m	94
PFOS	-	499.0 -> 80.0	-	N.D.			
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			
MeFOSA	-	512.0 -> 219.0	-	N.D.			

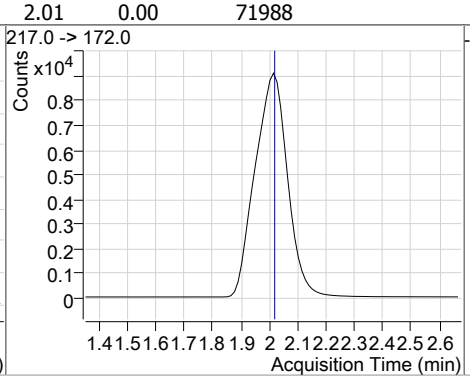
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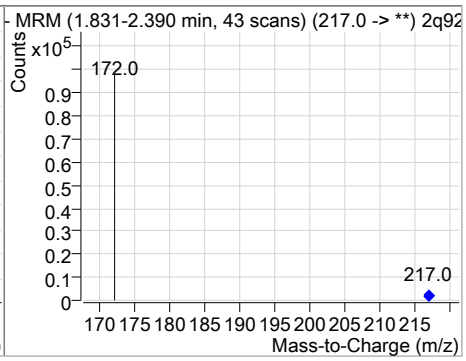
Perfluorinated Compounds by LC/MS/MS



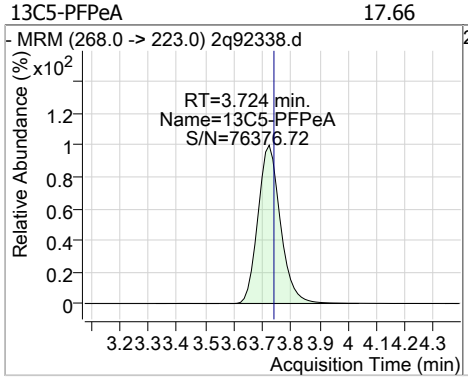
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.63	2.01	0.00	71988				

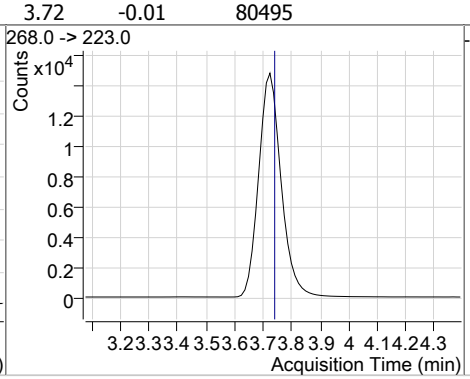


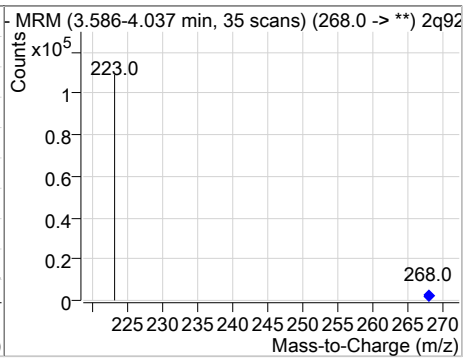




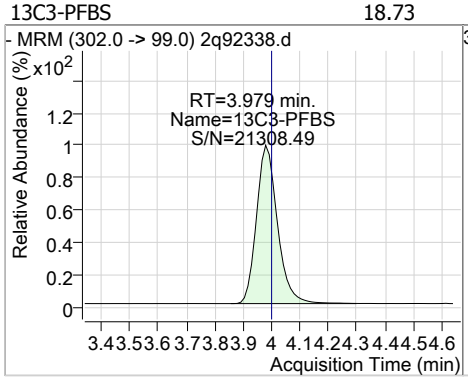
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.66	3.72	-0.01	80495				

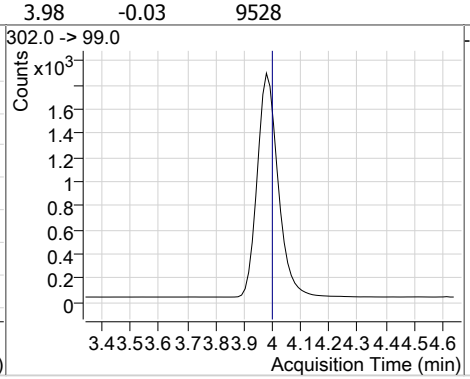


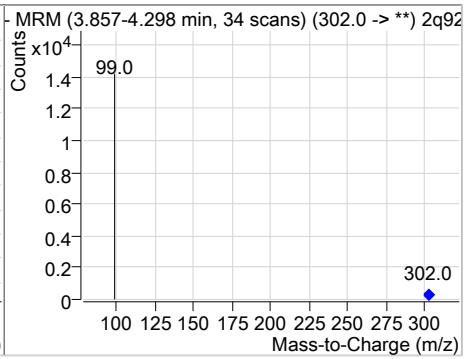




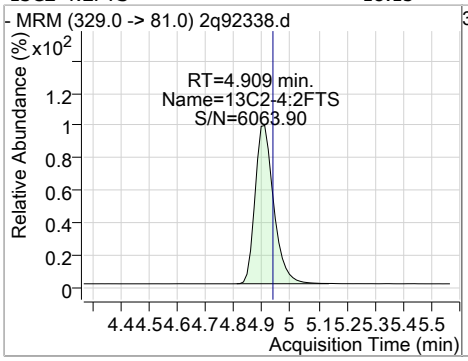
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.73	3.98	-0.03	9528				

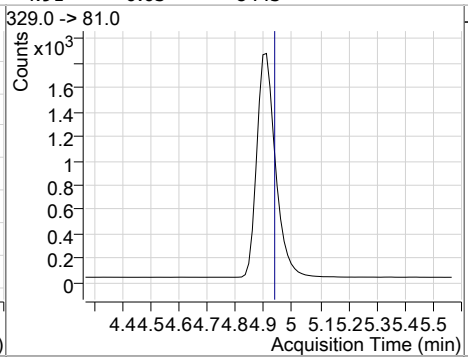


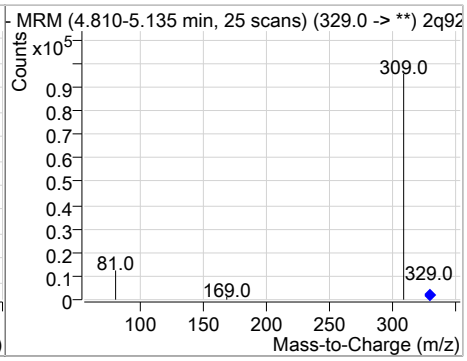




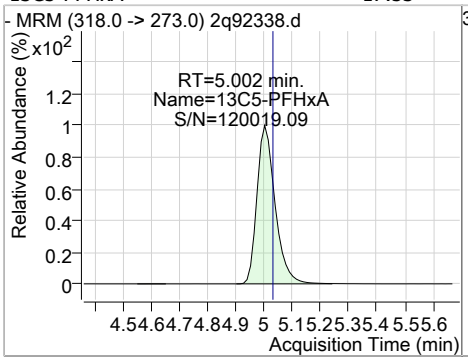
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.15	4.91	-0.03	8443				

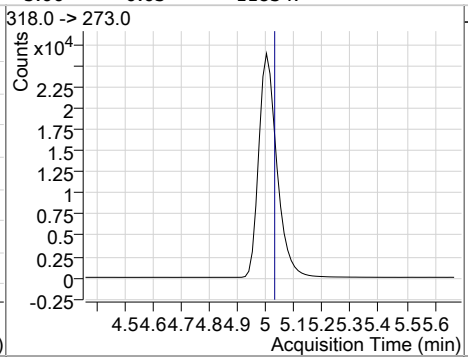


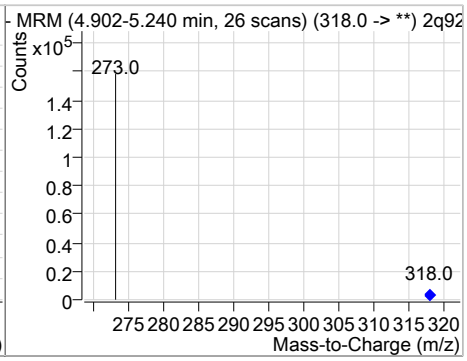




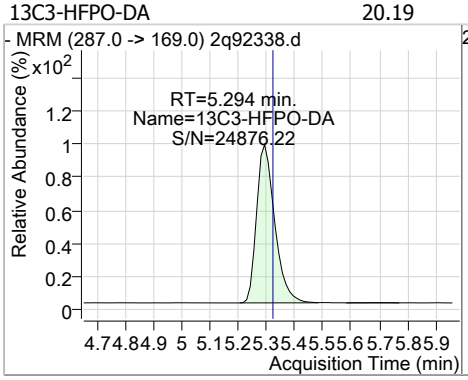
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13C5-PFHxA	17.53	5.00	-0.03	118347				

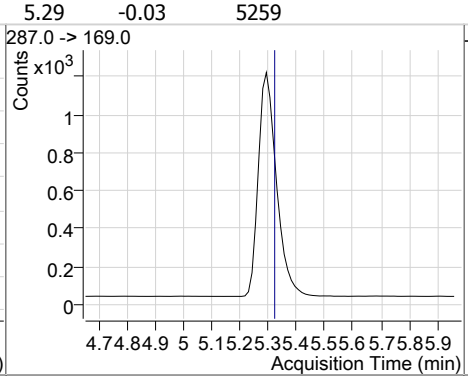


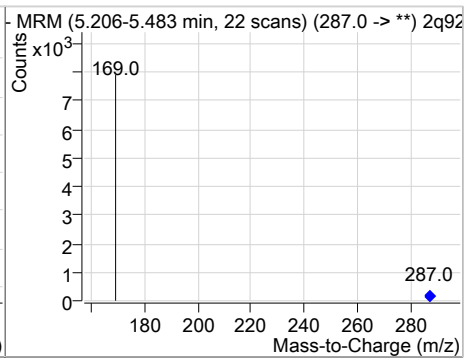




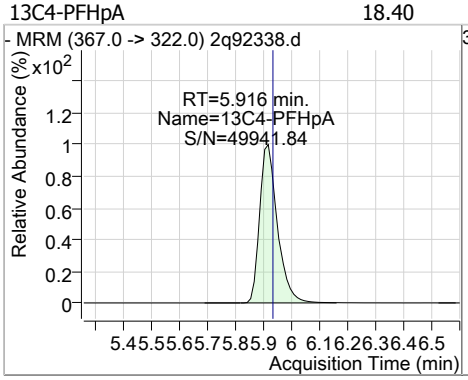
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.19	5.29	-0.03	5259				

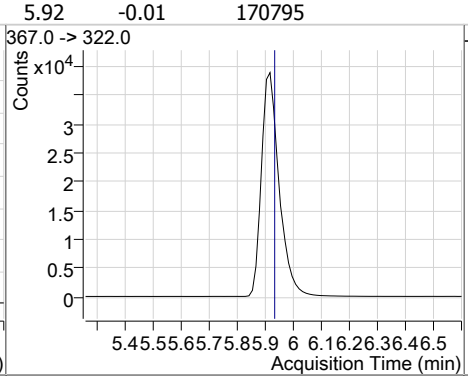


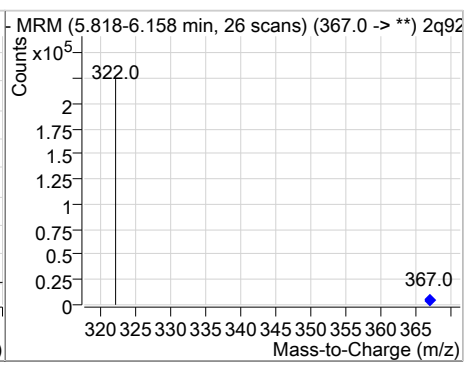




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.40	5.92	-0.01	170795				

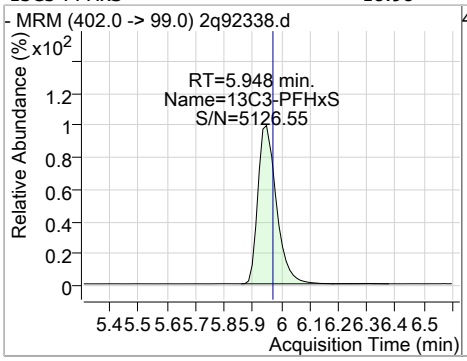


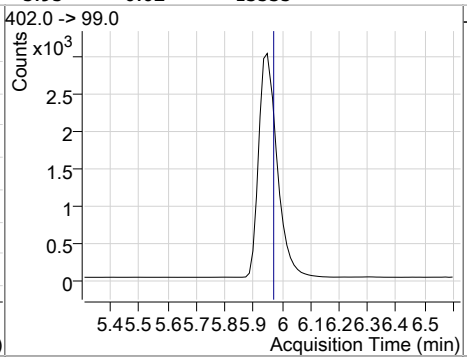


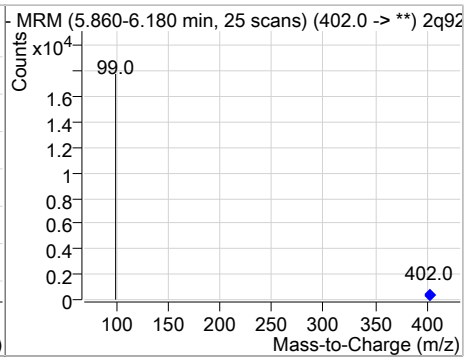


Perfluorinated Compounds by LC/MS/MS

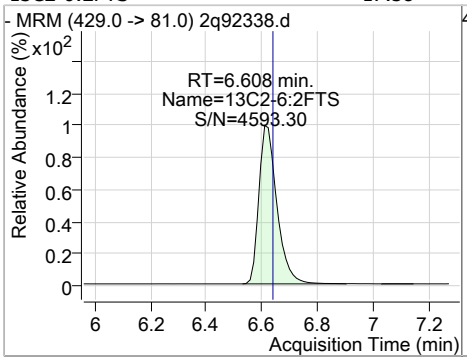
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13C3-PFHxS	18.98	5.95	-0.02	13535				

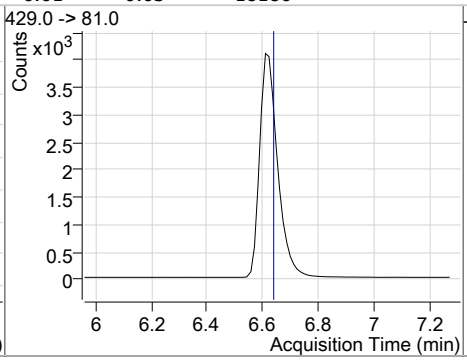


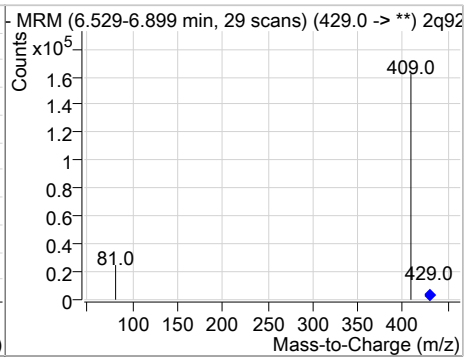




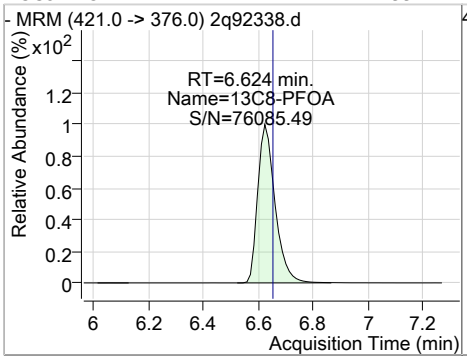
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.58	6.61	-0.03	18186				

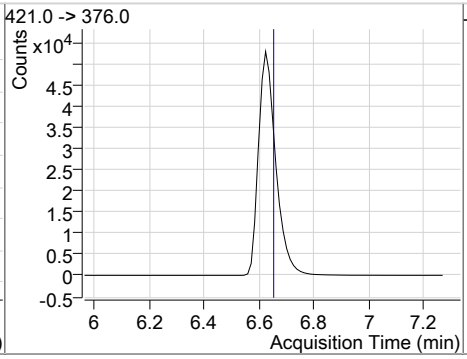


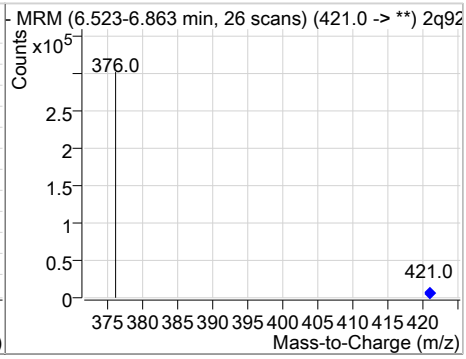




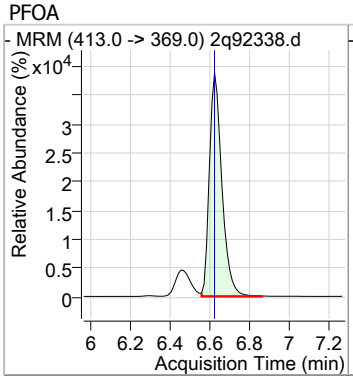
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13C8-PFOA	17.99	6.62	-0.03	231639				

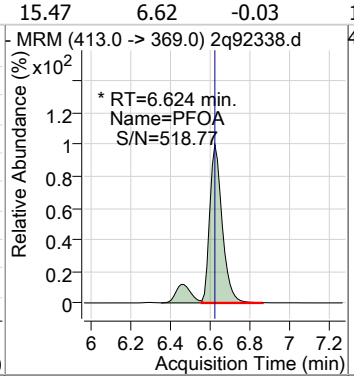


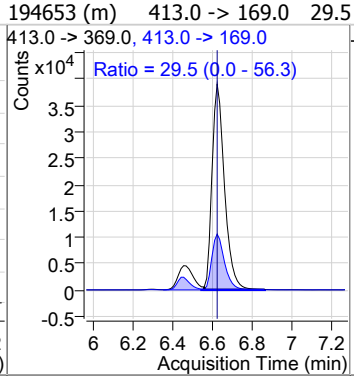


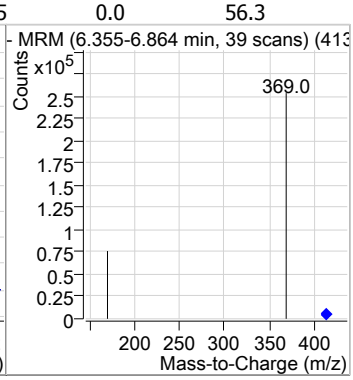


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	15.47	6.62	-0.03	194653 (m)	413.0 -> 169.0	29.5	0.0	56.3

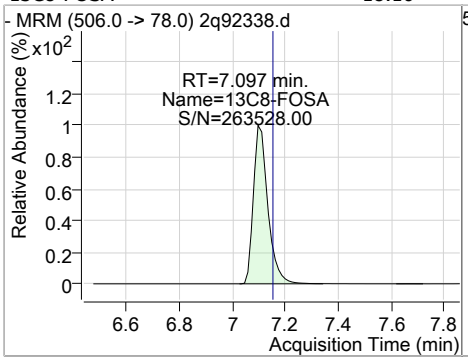


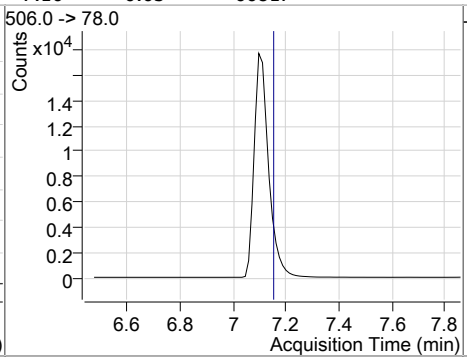


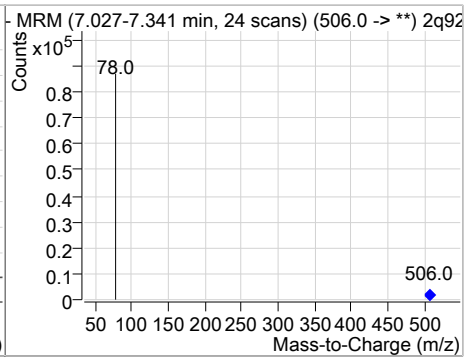




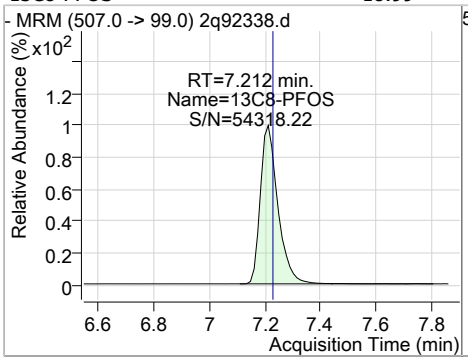
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13C8-FOSA	18.16	7.10	-0.05	66817				

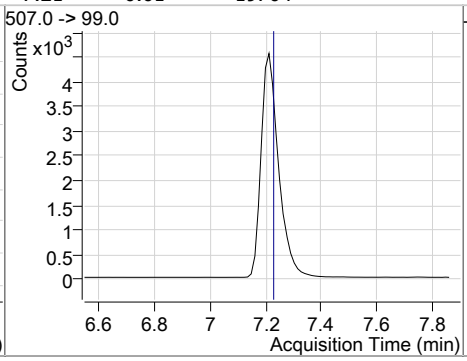


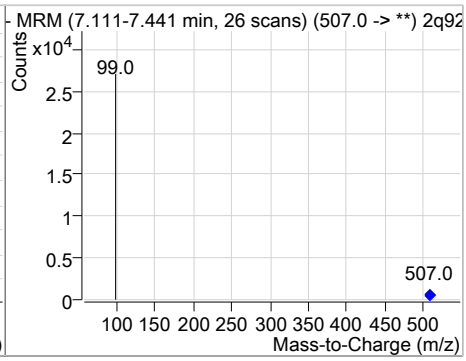




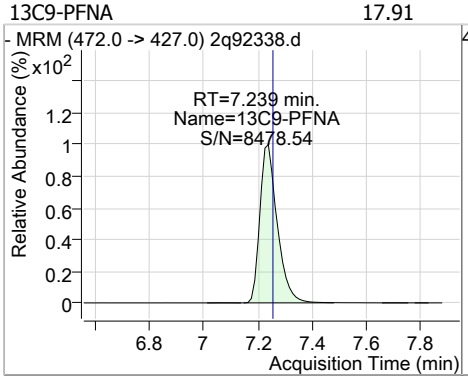
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13C8-PFOS	18.99	7.21	-0.01	19704				

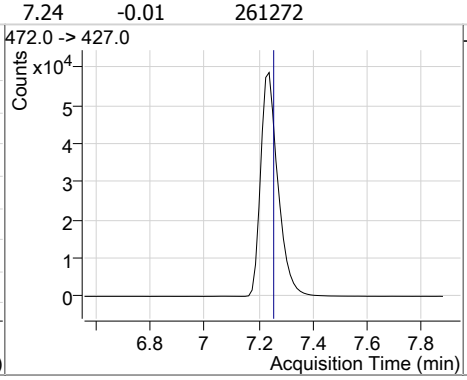


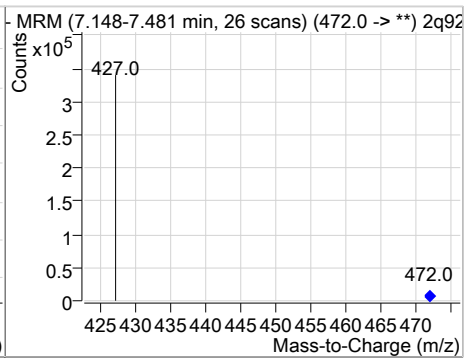




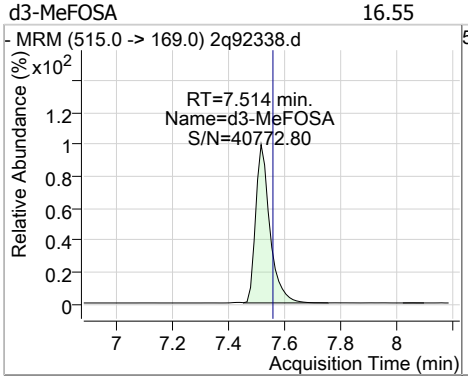
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13C9-PFNA	17.91	7.24	-0.01	261272				

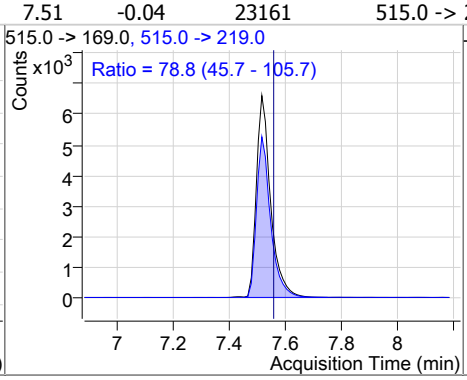


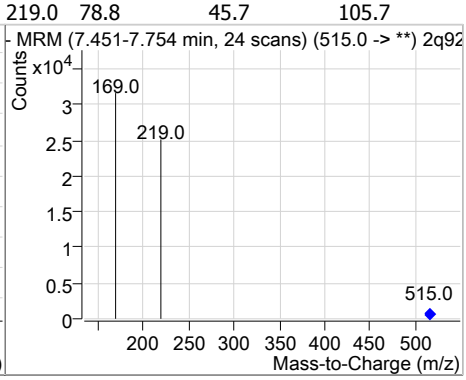




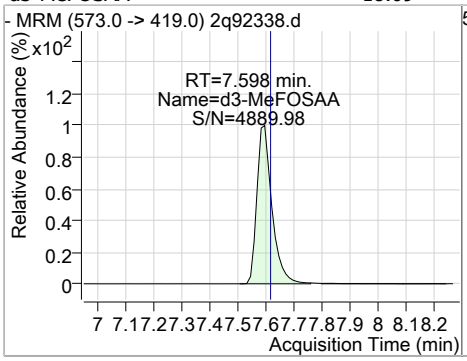
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	16.55	7.51	-0.04	23161	515.0 -> 219.0	78.8	45.7	105.7

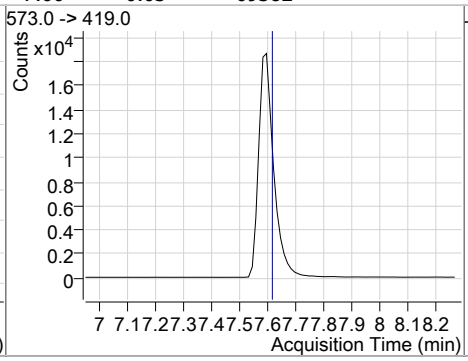


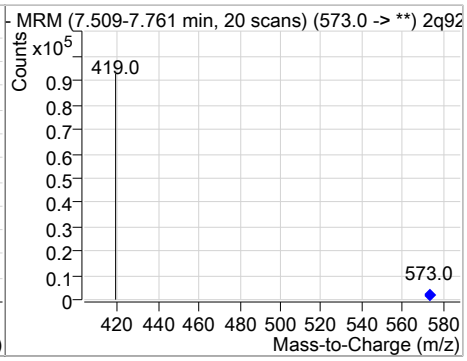




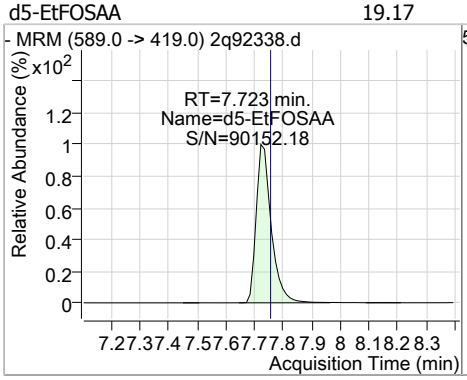
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.09	7.60	-0.03	69382				

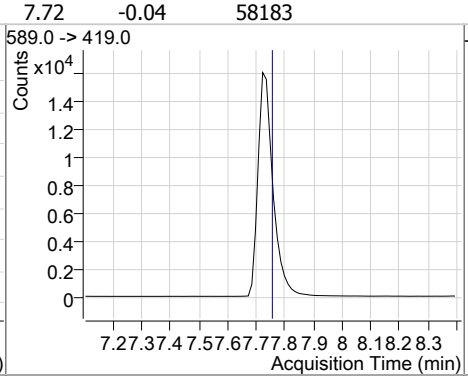


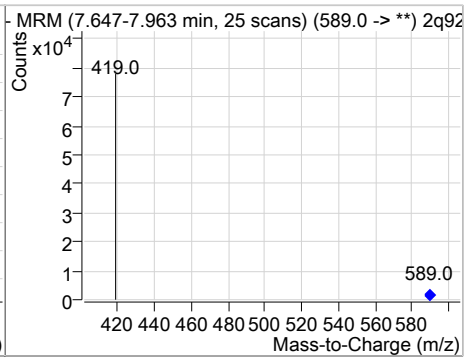




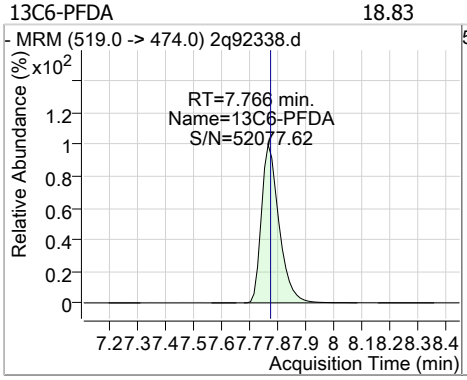
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	19.17	7.72	-0.04	58183				

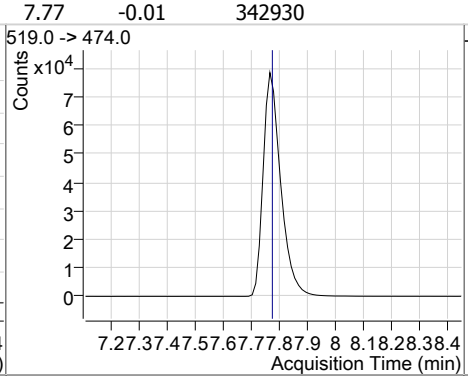


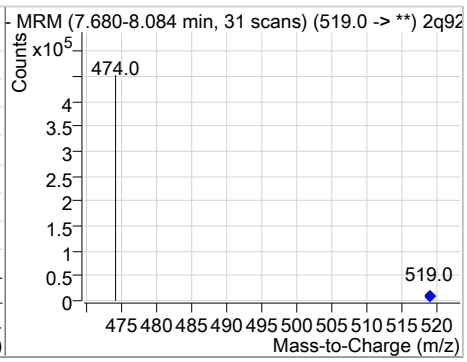




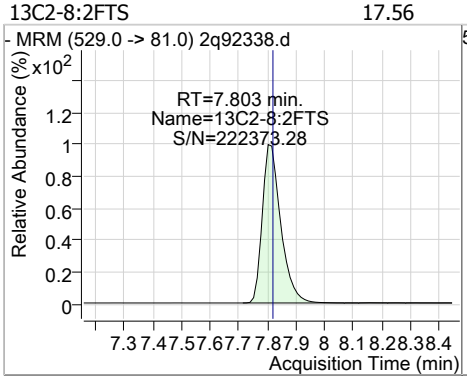
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.83	7.77	-0.01	342930				

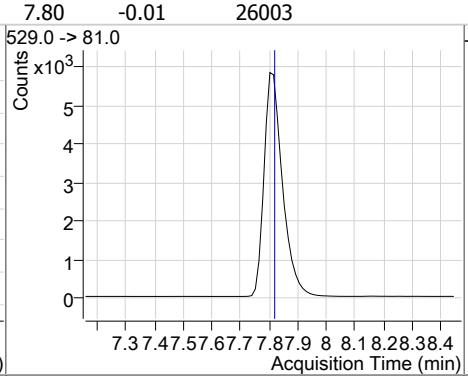


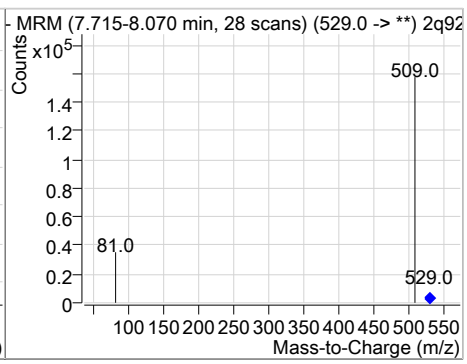




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.56	7.80	-0.01	26003				

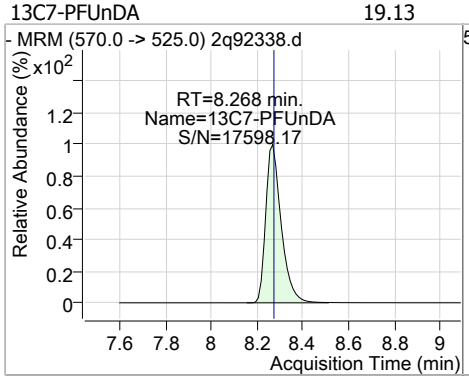


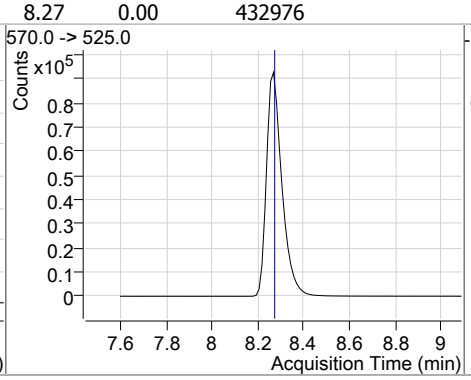


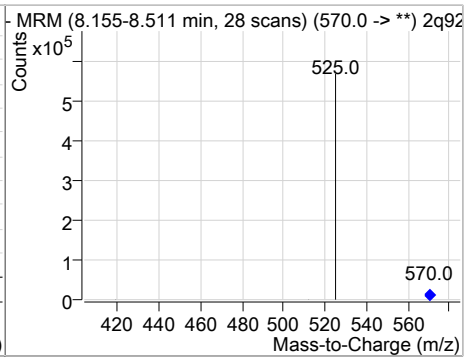


Perfluorinated Compounds by LC/MS/MS

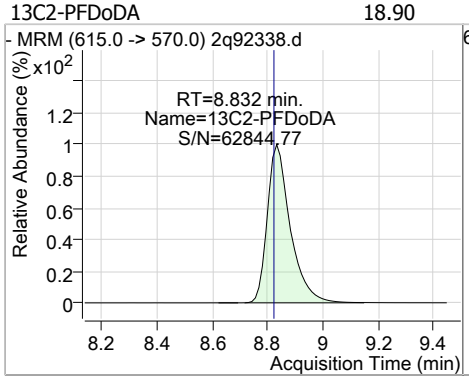
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.13	8.27	0.00	432976				

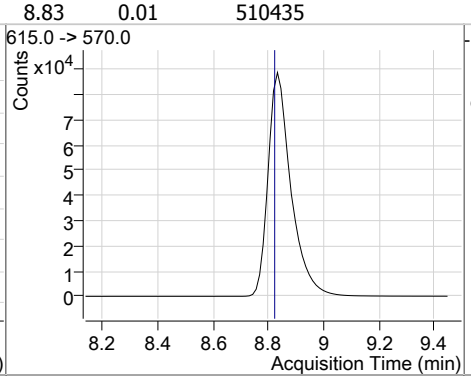


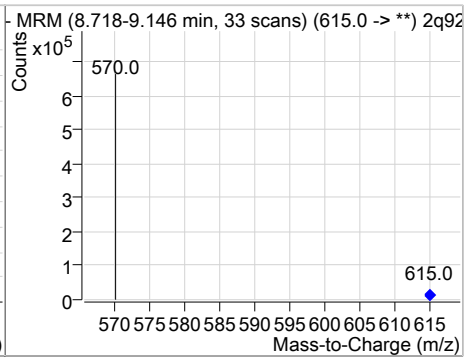




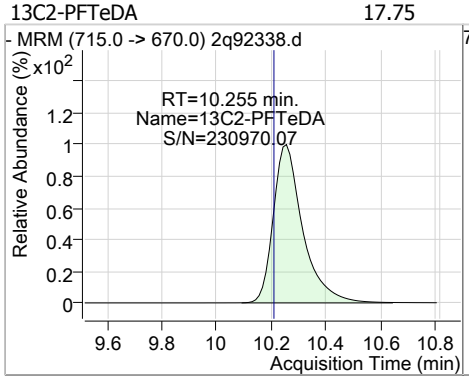
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.90	8.83	0.01	510435				

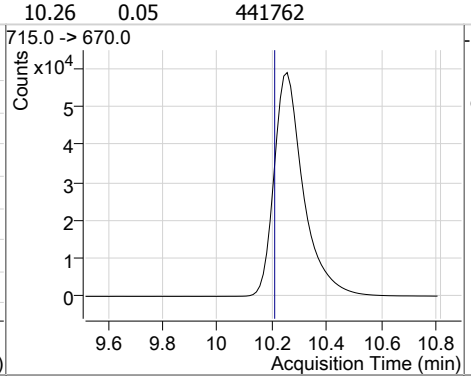


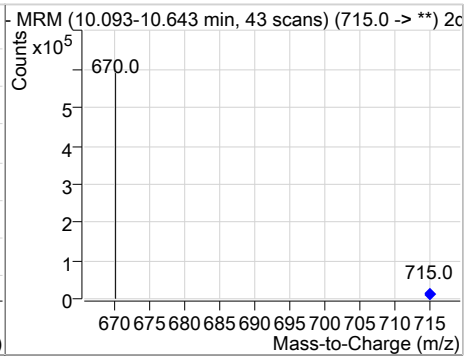




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.75	10.26	0.05	441762				







Manual Integration Approval Summary

Sample Number: S2Q1294-RT
Lab FileID: 2Q92338.D
Injection Time: 06/03/22 10:23
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 10:57 James Boone
Supervisor approved: 06/05/22 18:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.62	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:46

Perfluorinated Compounds by LC/MS/MS

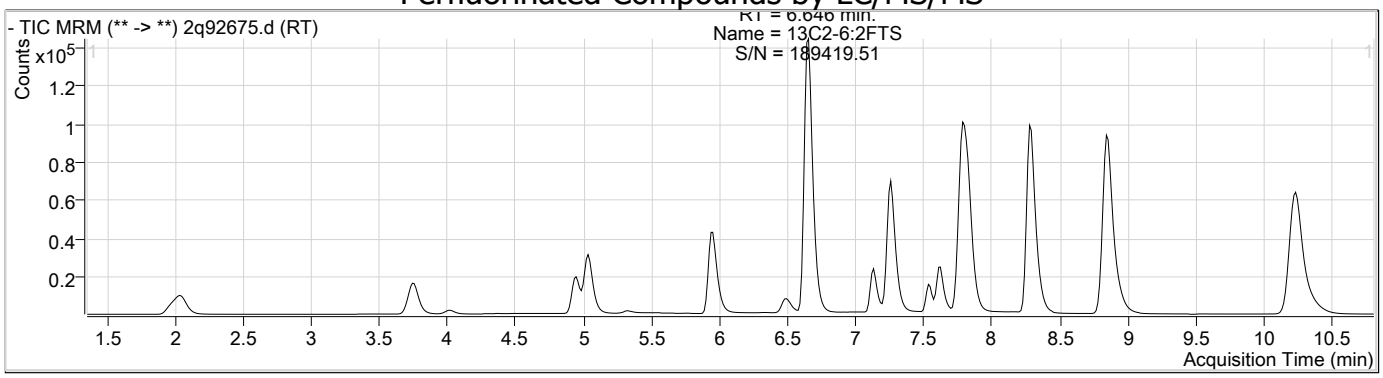
Data File : 2q92675.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/7/2022 8:47:20 PM
Sample Name : RT
Vial : P1-B2
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91255,S2Q1298,250,,,1.0,1,water

Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	70137	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	78564	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	90131	20.00	µg/L	0.013
M5-PFHxA	5.039	318.0 -> 273.0	132275	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	185441	20.00	µg/L	0.013
M8-PFOA	6.661	421.0 -> 376.0	253281	20.00	µg/L	0.013
M9-PFNA	7.265	472.0 -> 427.0	288362	20.00	µg/L	0.013
M6-PFDA	7.792	519.0 -> 474.0	376537	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	465125	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	541123	20.00	µg/L	0.027
M2-PFTeDA	10.230	715.0 -> 670.0	482984	20.00	µg/L	0.025
M8-FOSA	7.136	506.0 -> 78.0	81448	20.00	µg/L	-0.013
M3-PFBS	4.017	302.0 -> 99.0	10069	20.00	µg/L	0.013
M3-PFHxS	5.979	402.0 -> 99.0	15582	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	21089	20.00	µg/L	0.013
M2-4:2FTS	4.946	329.0 -> 81.0	9351	20.00	µg/L	0.013
M2-6:2FTS	6.646	429.0 -> 81.0	20900	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	29755	20.00	µg/L	0.013
M3-MeFOSAA	7.623	573.0 -> 419.0	83720	20.00	µg/L	0.000
M3-HFPO-DA	5.332	287.0 -> 169.0	4920	20.00	µg/L	0.013
M3-MeFOSA	7.539	515.0 -> 169.0	28500	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.946	329.0 -> 81.0	9351	20.10	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C2-6:2FTS	6.646	429.0 -> 81.0	20900	20.21	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C2-8:2FTS	7.828	529.0 -> 81.0	29755	20.09	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C2-PFDoDA	8.845	615.0 -> 570.0	541123	20.03	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C2-PFTeDA	10.230	715.0 -> 670.0	482984	19.40	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C3-PFBS	4.017	302.0 -> 99.0	10069	19.80	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C3-PFHxS	5.979	402.0 -> 99.0	15582	21.86	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.3%		
13C4-PFBA	2.027	217.0 -> 172.0	78564	20.33	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C4-PFHpA	5.941	367.0 -> 322.0	185441	19.97	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
d5-EtFOSAA	7.748	589.0 -> 419.0	70137	23.11	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.5%		
13C5-PFHxA	5.039	318.0 -> 273.0	132275	19.59	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%		
13C5-PFPeA	3.749	268.0 -> 223.0	90131	19.77	µg/L	0.013

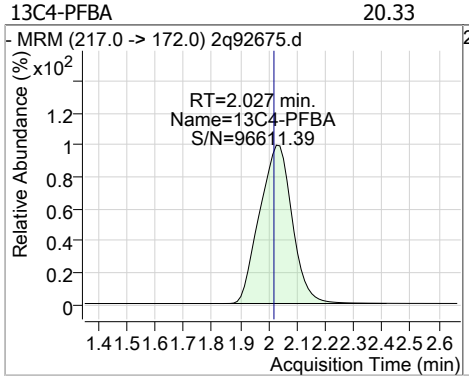
Perfluorinated Compounds by LC/MS/MS

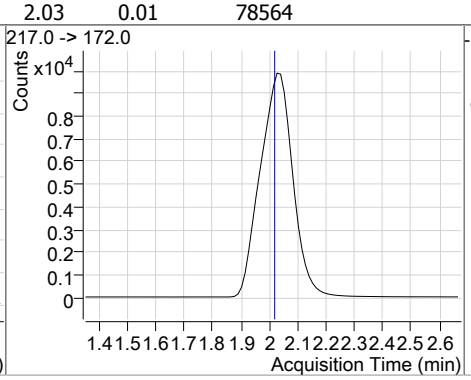
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C6-PFDA	7.792	519.0 -> 474.0	376537	20.67 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%		
13C7-PFUnDA	8.282	570.0 -> 525.0	465125	20.55 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
13C8-FOSA	7.136	506.0 -> 78.0	81448	22.13 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.7%		
13C8-PFOA	6.661	421.0 -> 376.0	253281	19.67 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C8-PFOS	7.237	507.0 -> 99.0	21089	20.32 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C9-PFNA	7.265	472.0 -> 427.0	288362	19.77 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
d3-MeFOSAA	7.623	573.0 -> 419.0	83720	21.83 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.2%		
13C3-HFPO-DA	5.332	287.0 -> 169.0	4920	18.89 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
d3-MeFOSA	7.539	515.0 -> 169.0	28500	20.36 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
Target Compounds						**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	-	313.0 -> 269.0	-	N.D.		
PFHxS	-	399.0 -> 80.0	-	N.D.		
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.662	413.0 -> 369.0	213517	15.52 µg/L	m	95
PFOS	-	499.0 -> 80.0	-	N.D.		
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		
MeFOSA	-	512.0 -> 219.0	-	N.D.		

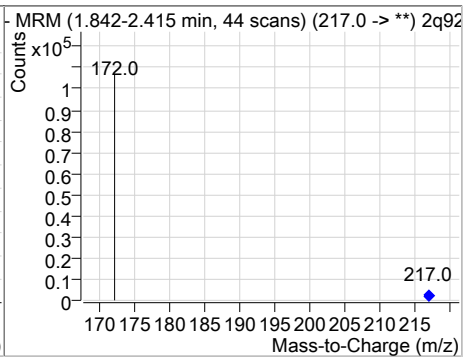
= Qualifier out of range, m = manually integrated, + = Area summed



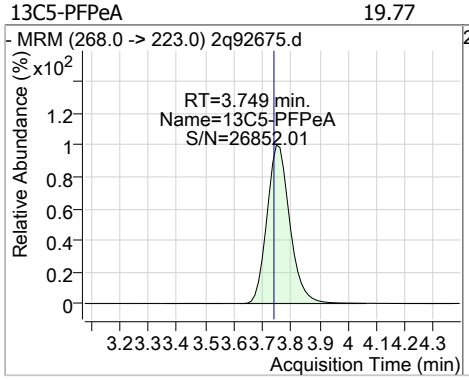
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.33	2.03	0.01	78564				

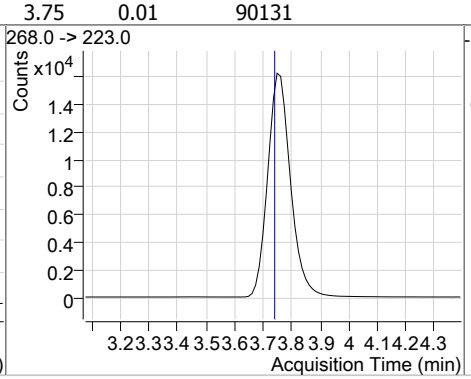


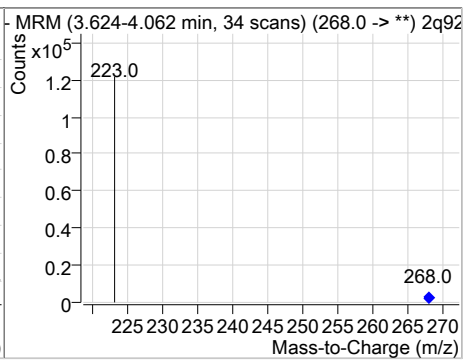




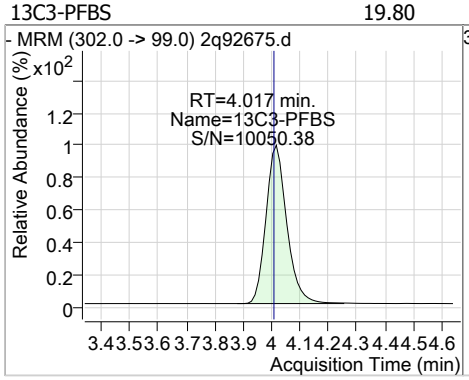
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.77	3.75	0.01	90131				

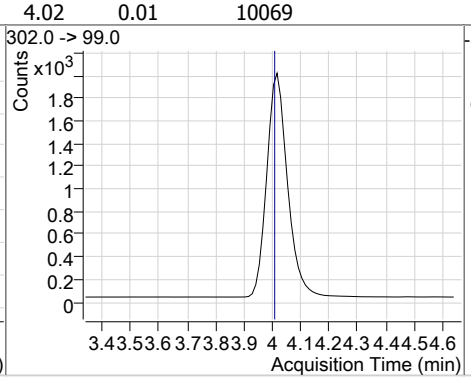


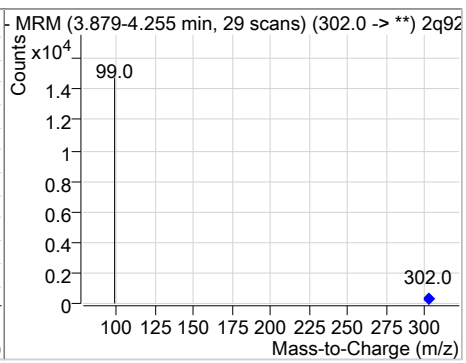




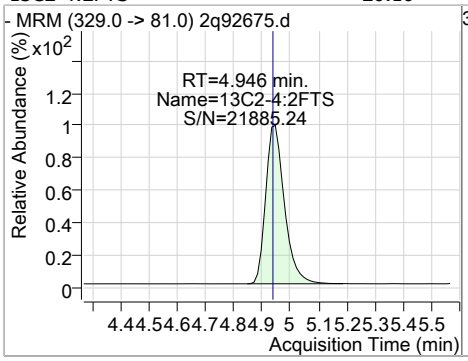
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.80	4.02	0.01	10069				

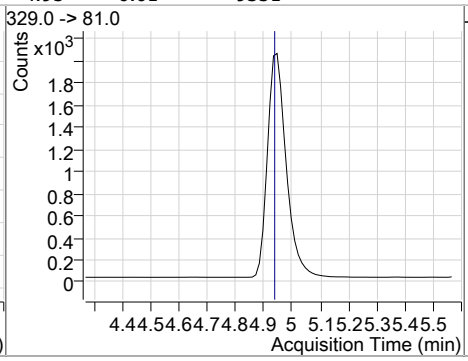


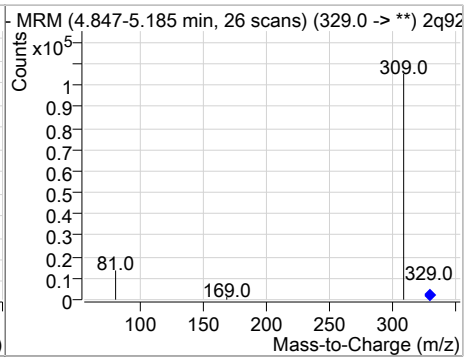




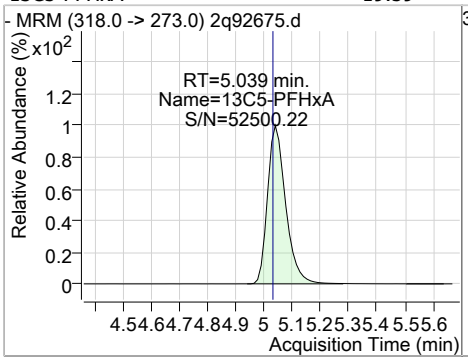
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.10	4.95	0.01	9351				

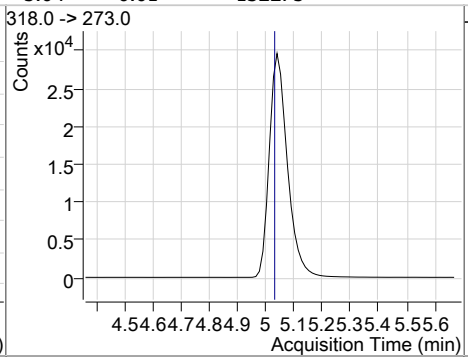


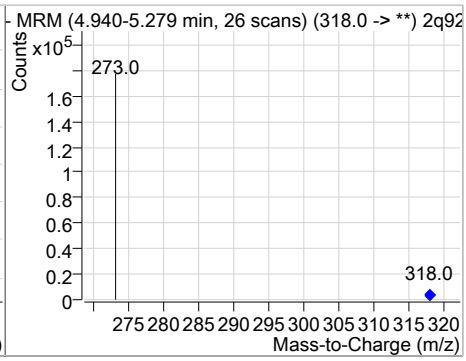




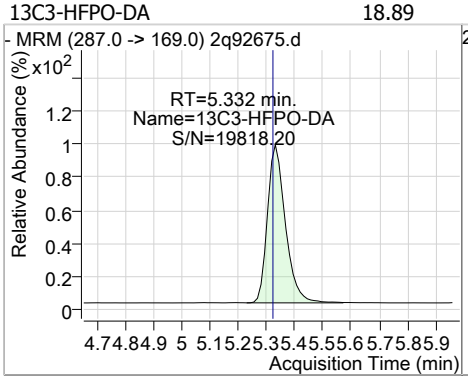
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.59	5.04	0.01	132275				

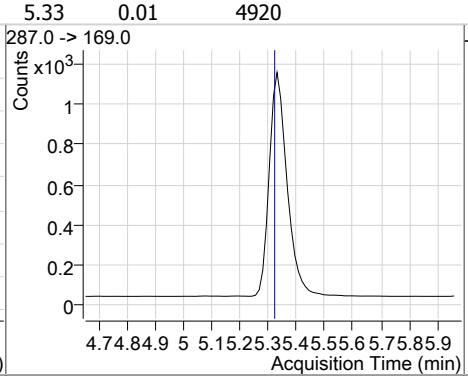


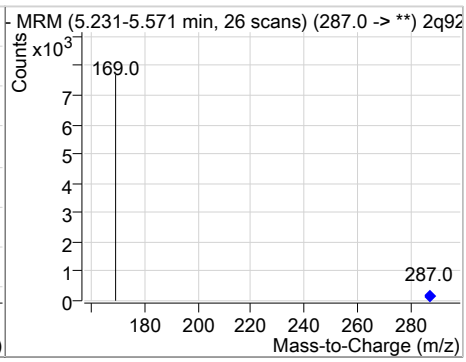




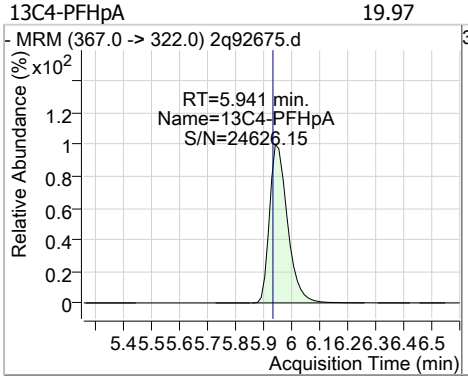
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.89	5.33	0.01	4920				

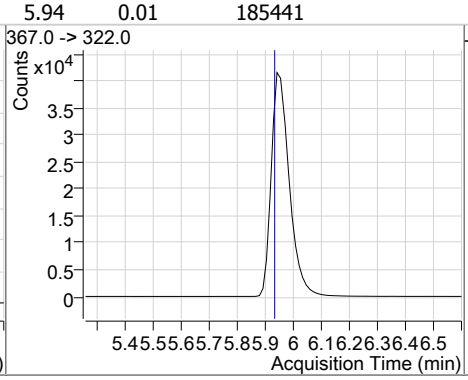


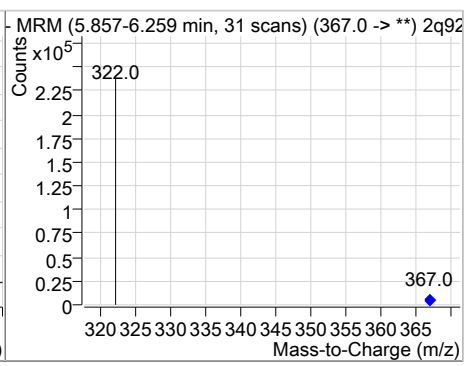




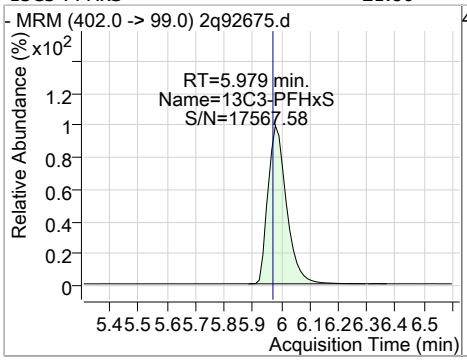
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.97	5.94	0.01	185441				

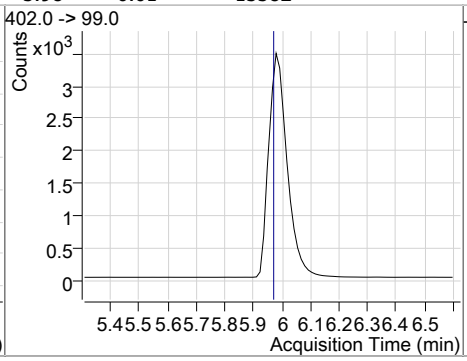


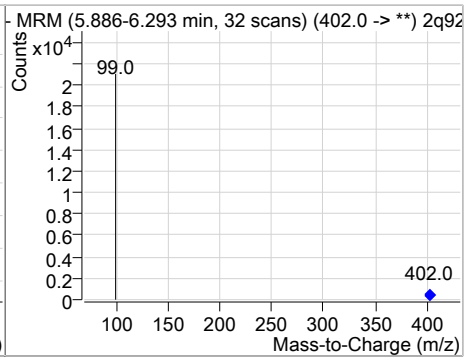




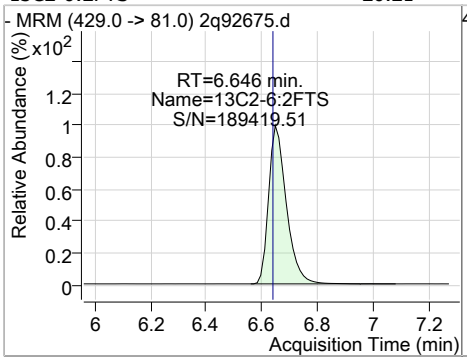
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.86	5.98	0.01	15582				

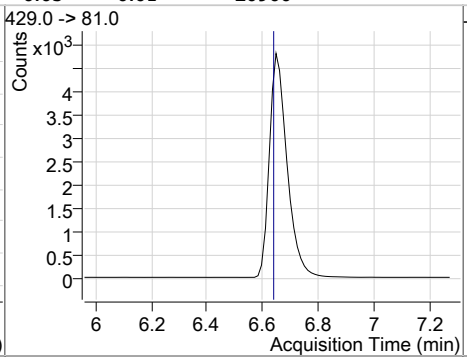


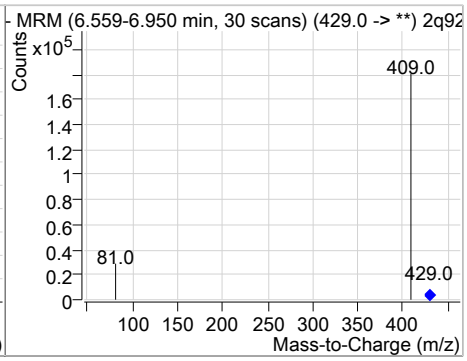




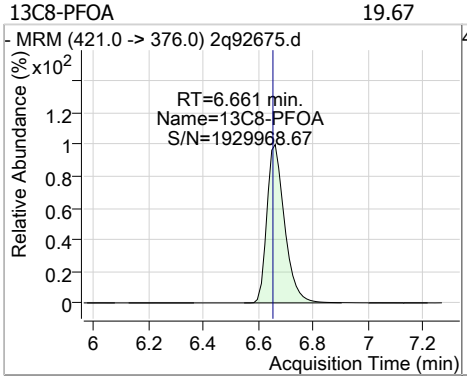
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.21	6.65	0.01	20900				

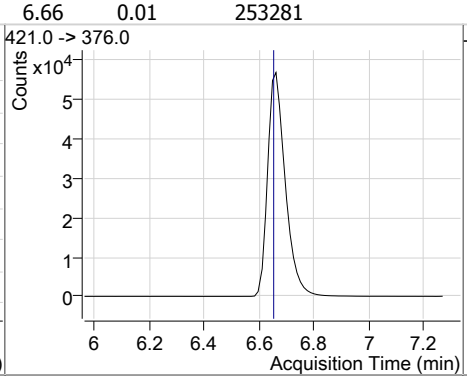


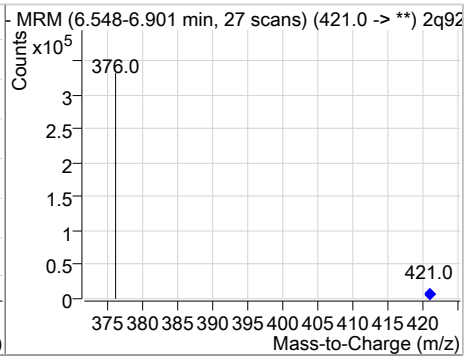




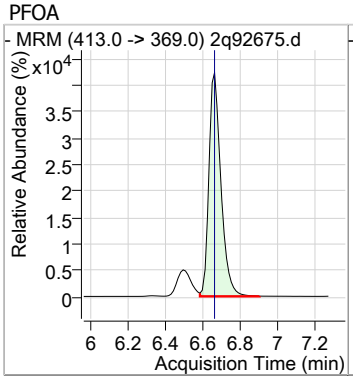
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.67	6.66	0.01	253281				

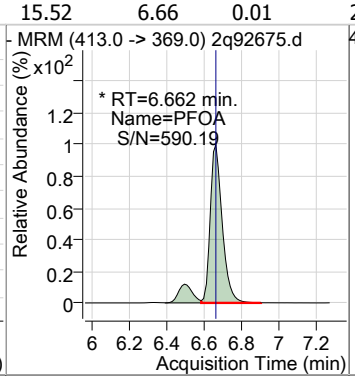


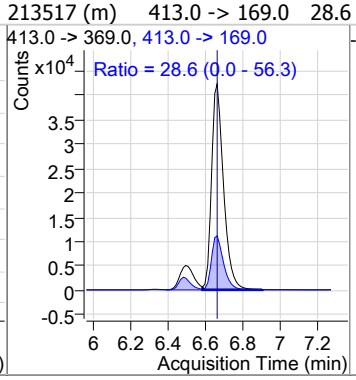


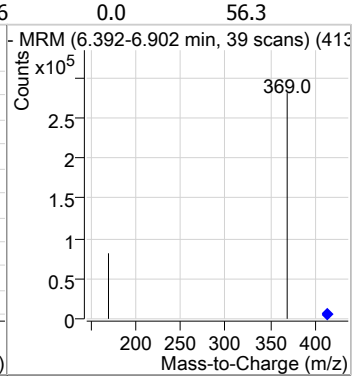


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	15.52	6.66	0.01	213517 (m)	413.0 -> 169.0	28.6	0.0	56.3

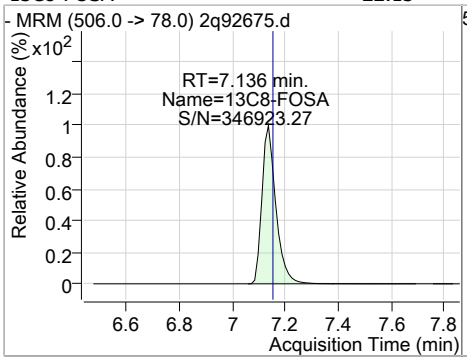


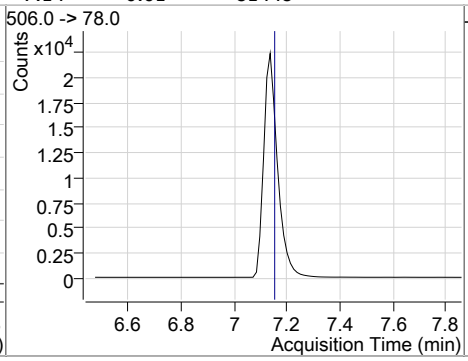


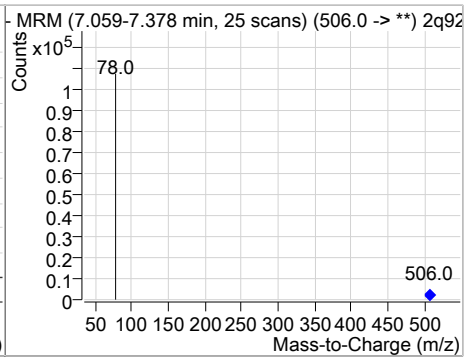




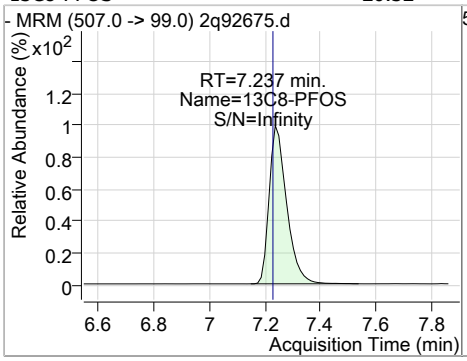
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.13	7.14	-0.01	81448				

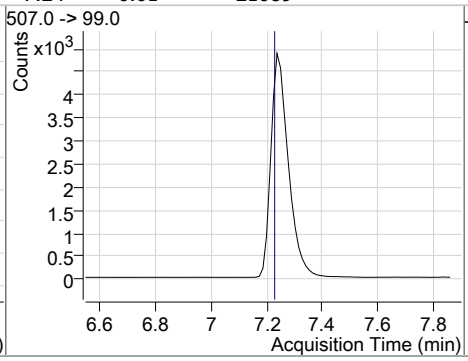


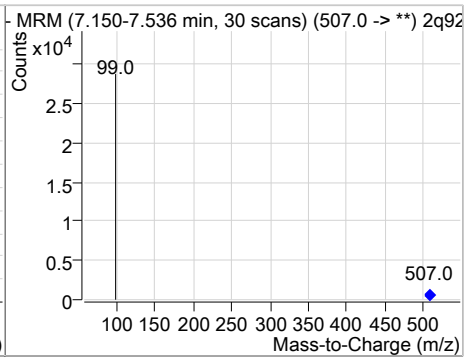




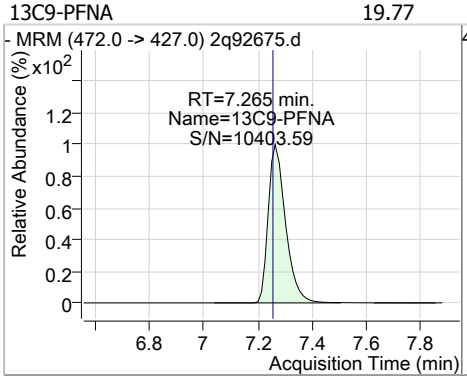
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.32	7.24	0.01	21089				

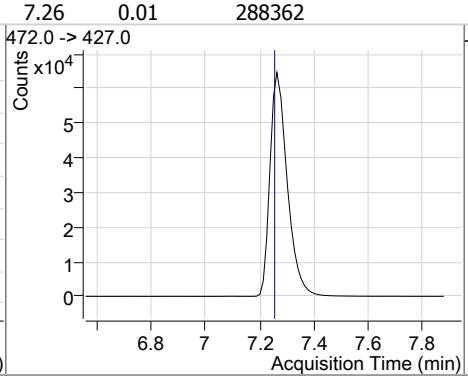


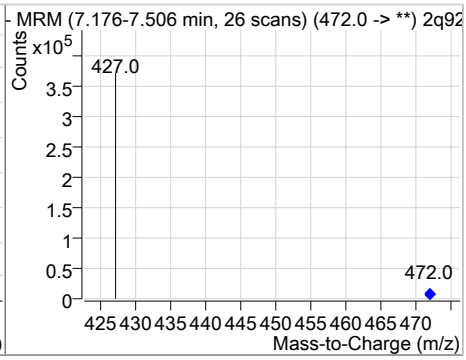




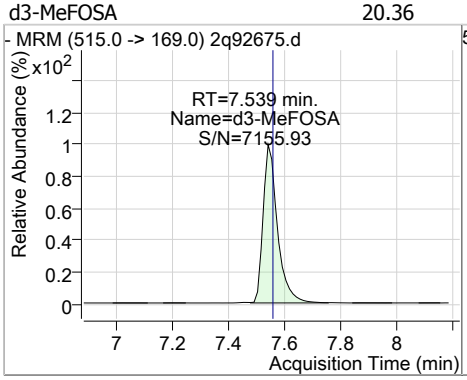
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.77	7.26	0.01	288362				

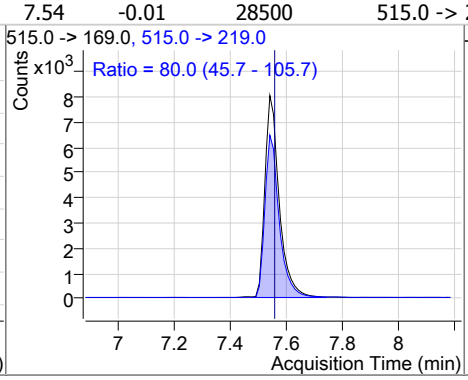


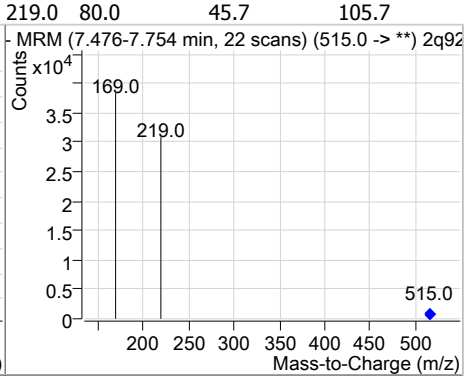




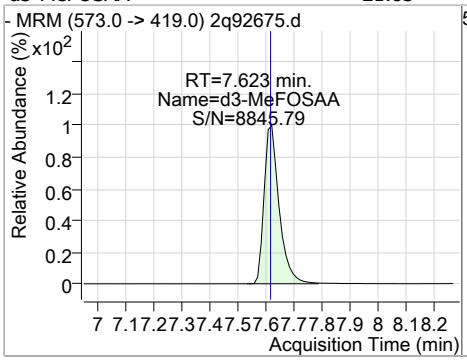
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	20.36	7.54	-0.01	28500	515.0 -> 219.0	80.0	45.7	105.7

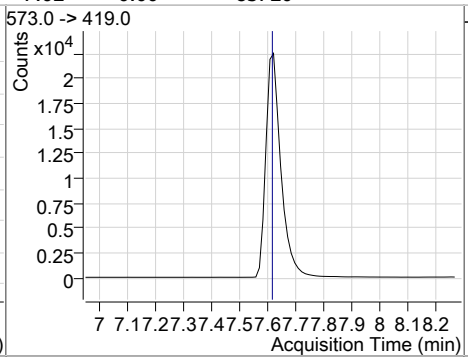


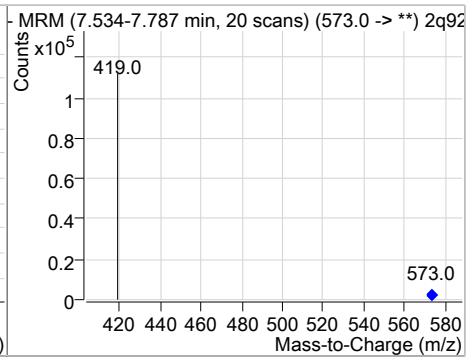




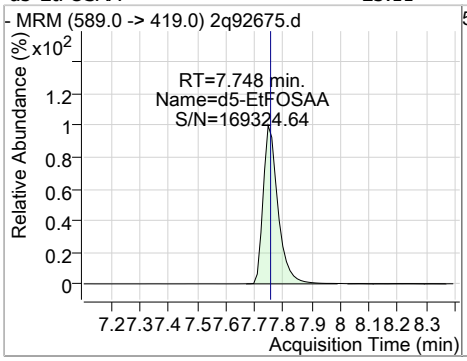
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.83	7.62	0.00	83720				

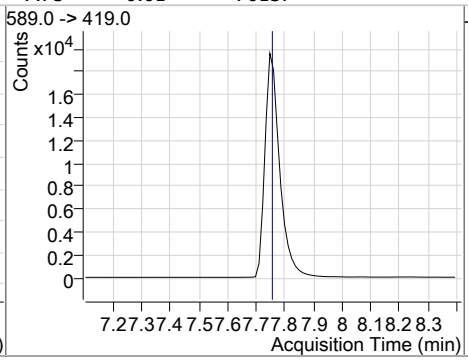


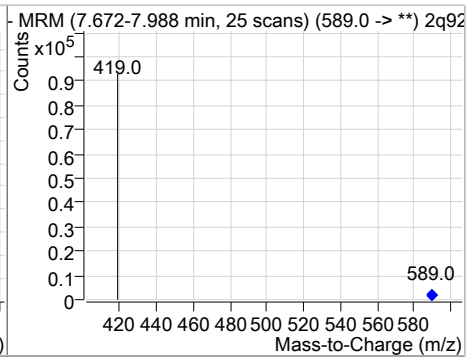




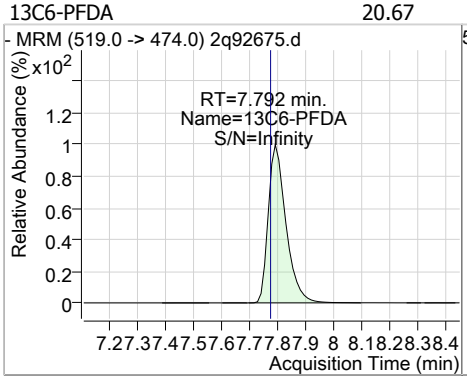
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	23.11	7.75	-0.01	70137				

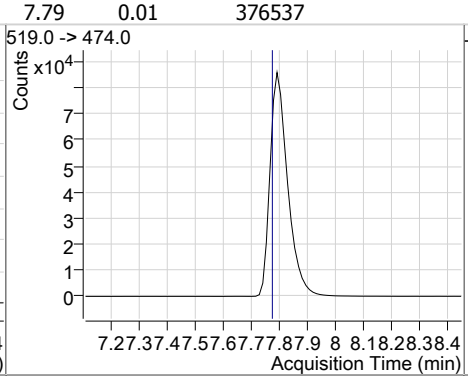


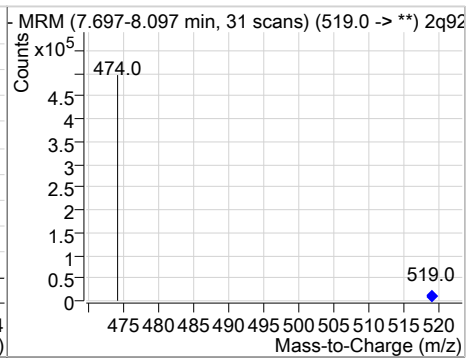




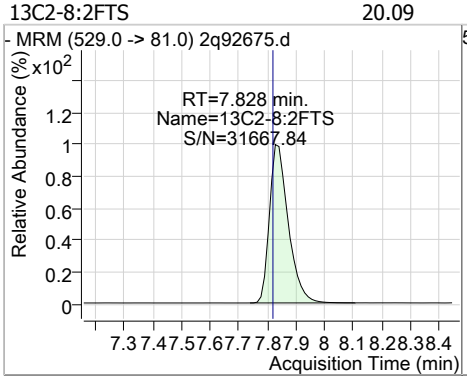
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.67	7.79	0.01	376537				

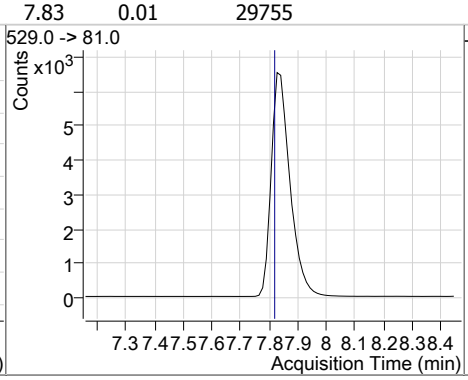


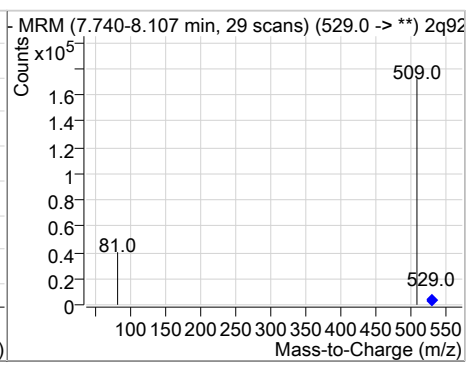




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.09	7.83	0.01	29755				

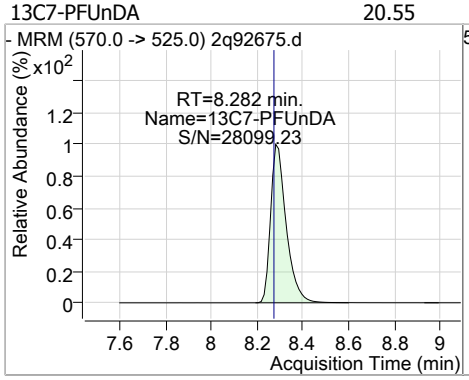


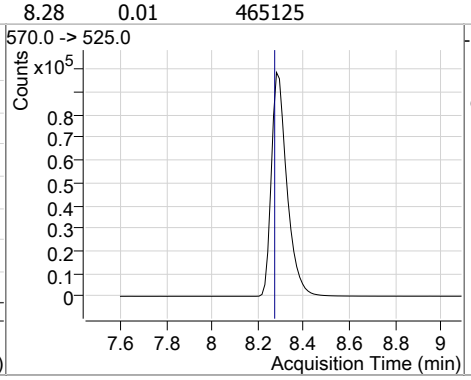


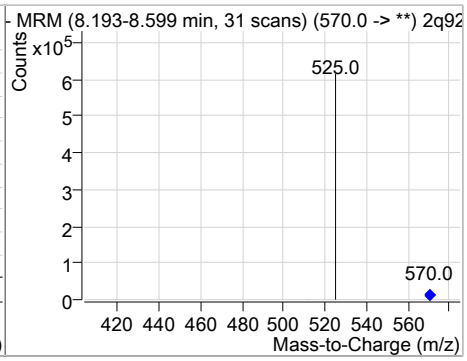


Perfluorinated Compounds by LC/MS/MS

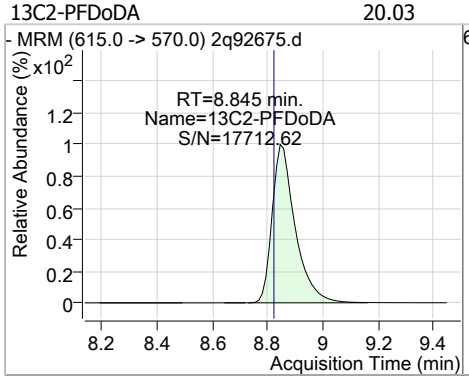
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.55	8.28	0.01	465125				

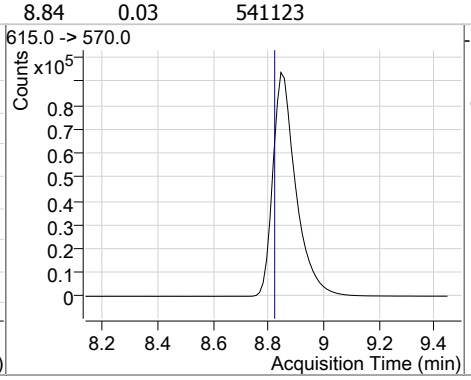


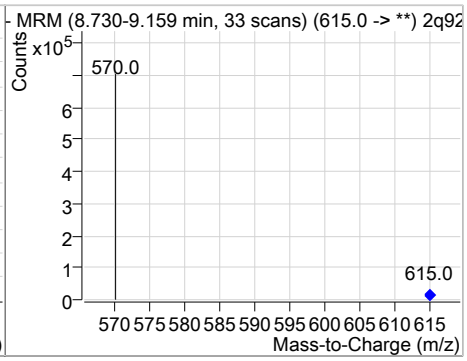




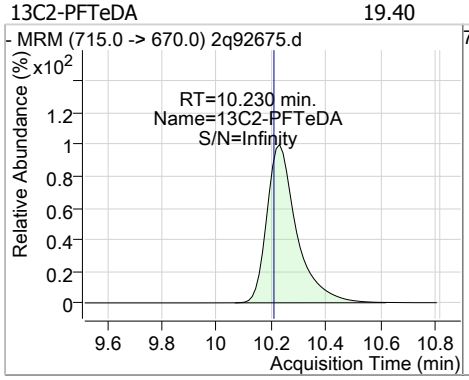
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.03	8.84	0.03	541123				

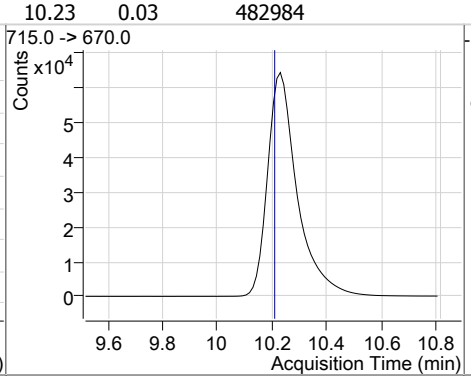


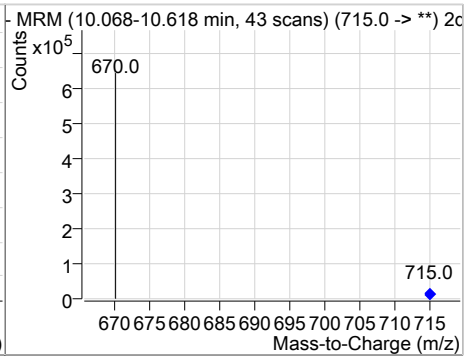




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.40	10.23	0.03	482984				







Manual Integration Approval Summary

Sample Number: S2Q1298-RT
Lab FileID: 2Q92675.D
Injection Time: 06/07/22 20:47
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 13:38 Natasha Gumtie
Supervisor approved: 06/08/22 15:46 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.66	Split peak

QQQ Check Tune Report

Agilent Technologies

Instrument Name	Instrument 1
MS Model	G6470A
MS Instrument Serial	SG1636G008
Software_Firmware Version	B.08.00.B8023.0, FW: A.00.08.21
Tune Date & Time	05:16:22 13:19:56
Data Path	D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source	AJS ESI
Ionization Mode	AJS ESI
Tuned Resolution	All
Vacuum Pressure	1.58E+0[R]; 2.91E-5[H]

Source Parameters

Parameter	Value
Gas Temp	300
Gas Flow	8
Nebulizer	15
Capillary	4000
Nozzle Voltage	1500
Sheath Gas Temp	250
Sheath Gas Flow	7

QQQ Check Tune Report

Agilent Technologies

Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.69	-0.01	Pass	142462
302.00	302.01	0.01	Pass	0.70	0.69	-0.01	Pass	8302
601.98	602.02	0.04	Pass	0.70	0.67	-0.03	Pass	152384
1033.99	1034.08	0.09	Pass	0.70	0.65	-0.05	Pass	591100
1633.95	1633.99	0.04	Pass	0.70	0.66	-0.04	Pass	668814
2233.91	2233.86	-0.05	Pass	0.70	0.61	-0.09	Pass	137541

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	68.99	-0.01	Pass	0.70	0.75	0.05	Pass	39016
112.99	112.98	-0.01	Pass	0.70	0.78	0.08	Pass	88500
302.00	301.94	-0.06	Pass	0.70	0.74	0.04	Pass	8022
601.98	601.95	-0.03	Pass	0.70	0.73	0.03	Pass	126885
1033.99	1033.92	-0.07	Pass	0.70	0.73	0.03	Pass	418049
1633.95	1633.81	-0.14	Pass	0.70	0.69	-0.01	Pass	1456353
2233.91	2233.79	-0.12	Pass	0.70	0.87	0.17	Adjust	774493

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.06	0.07	Pass	1.20	1.18	-0.02	Pass	168343
302.00	301.99	-0.01	Pass	1.20	1.39	0.19	Pass	11309
601.98	601.82	-0.16	Pass	1.20	1.43	0.23	Pass	213566
1033.99	1033.91	-0.08	Pass	1.20	1.49	0.29	Pass	957327
1633.95	1633.67	-0.28	Pass	1.20	1.44	0.24	Pass	1331772
2233.91	2233.56	-0.35	Pass	1.20	1.45	0.25	Pass	416438

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.00	0.00	Pass	1.20	1.10	-0.10	Pass	47045
112.99	113.01	0.02	Pass	1.20	1.13	-0.07	Pass	119217
302.00	301.90	-0.10	Pass	1.20	1.07	-0.13	Pass	10378
601.98	601.84	-0.14	Pass	1.20	1.16	-0.04	Pass	169219
1033.99	1033.88	-0.11	Pass	1.20	1.12	-0.08	Pass	593169
1633.95	1633.80	-0.15	Pass	1.20	1.16	-0.04	Pass	2273032
2233.91	2233.82	-0.09	Pass	1.20	1.17	-0.03	Pass	1195017

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.95	-0.04	Pass	2.50	2.54	0.04	Pass	208795
302.00	302.01	0.01	Pass	2.50	2.72	0.22	Pass	13014
601.98	601.91	-0.07	Pass	2.50	2.95	0.45	Pass	267323
1033.99	1033.92	-0.07	Pass	2.50	3.10	0.60	Pass	1362840
1633.95	1633.54	-0.41	Pass	2.50	3.71	1.21	Pass	2034624
2233.91	2233.52	-0.39	Pass	2.50	2.41	-0.09	Pass	734269

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	68.95	-0.05	Pass	2.50	2.48	-0.02	Pass	58065
112.99	112.99	0.00	Pass	2.50	2.45	-0.05	Pass	172560
302.00	301.97	-0.03	Pass	2.50	2.34	-0.16	Pass	13293
601.98	601.96	-0.02	Pass	2.50	2.39	-0.11	Pass	246942
1033.99	1033.96	-0.03	Pass	2.50	2.21	-0.29	Pass	1357687
1633.95	1633.73	-0.22	Pass	2.50	2.26	-0.24	Pass	5836496
2233.91	2233.82	-0.09	Pass	2.50	2.12	-0.38	Pass	3983418

Perfluorinated Compounds by LC/MS/MS

Data File	:	2q91956.d
Operator	:	jamesb
Acq. Method	:	537_ID.m
Acq. Date-Time	:	5/27/2022 11:54:52 AM
Sample Name	:	ic1287-0.5
Vial	:	P1-A2
DA Method File	:	ID_050922_S2Q1287.quantmethod.xml
Batch Name	:	s2q1287.batch.bin
Sample Information	:	op91255,S2Q1287,250,,,1.0,1,water

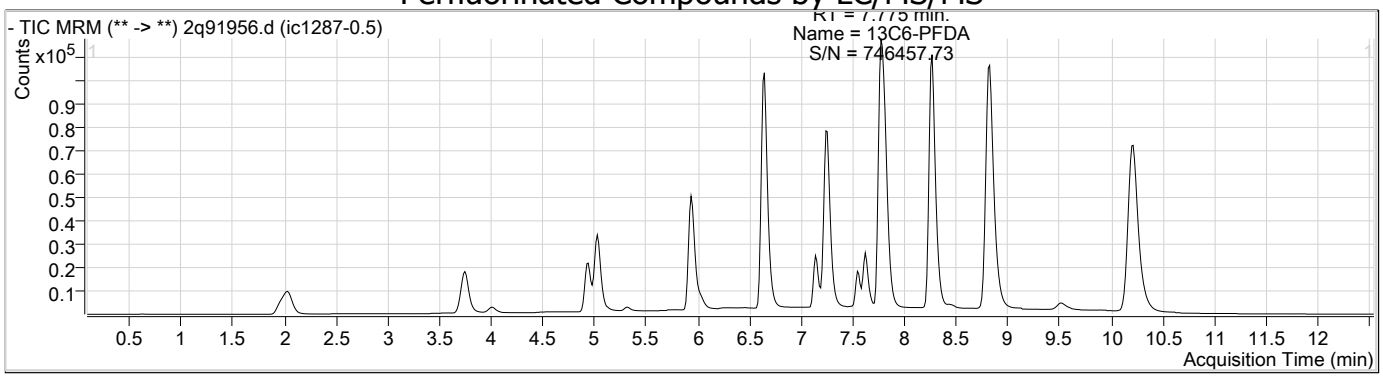
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.759	589.0 -> 419.0	63083	20.00	µg/L	-0.002
M4-PFBA	2.027	217.0 -> 172.0	77645	20.00	µg/L	0.012
M5-PFPeA	3.753	268.0 -> 223.0	91366	20.00	µg/L	0.016
M5-PFHxA	5.032	318.0 -> 273.0	135570	20.00	µg/L	0.005
M4-PFHpA	5.939	367.0 -> 322.0	188945	20.00	µg/L	0.010
M8-PFOA	6.649	421.0 -> 376.0	258549	20.00	µg/L	0.000
M9-PFNA	7.257	472.0 -> 427.0	296435	20.00	µg/L	0.005
M6-PFDA	7.775	519.0 -> 474.0	371869	20.00	µg/L	-0.005
M7-PFUnDA	8.267	570.0 -> 525.0	464901	20.00	µg/L	-0.002
M2-PFDoDA	8.823	615.0 -> 570.0	555777	20.00	µg/L	0.005
M2-PFTeDA	10.209	715.0 -> 670.0	493450	20.00	µg/L	0.004
M8-FOSA	7.141	506.0 -> 78.0	77035	20.00	µg/L	-0.008
M3-PFBS	4.013	302.0 -> 99.0	10029	20.00	µg/L	0.009
M3-PFHxS	5.975	402.0 -> 99.0	14256	20.00	µg/L	0.009
M8-PFOS	7.230	507.0 -> 99.0	21665	20.00	µg/L	0.005
M2-4:2FTS	4.942	329.0 -> 81.0	9272	20.00	µg/L	0.008
M2-6:2FTS	6.635	429.0 -> 81.0	21273	20.00	µg/L	0.002
M2-8:2FTS	7.812	529.0 -> 81.0	29230	20.00	µg/L	-0.004
M3-MeFOSAA	7.620	573.0 -> 419.0	76324	20.00	µg/L	-0.003
M3-HFPO-DA	5.325	287.0 -> 169.0	5287	20.00	µg/L	0.006
M3-MeFOSA	7.547	515.0 -> 169.0	29693	20.00	µg/L	-0.005
System Monitoring Compounds						
13C2-4:2FTS	4.942	329.0 -> 81.0	9272	19.93	µg/L	0.008
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C2-6:2FTS	6.635	429.0 -> 81.0	21273	20.57	µg/L	0.002
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
13C2-8:2FTS	7.812	529.0 -> 81.0	29230	19.74	µg/L	-0.004
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.7%		
13C2-PFDoDA	8.823	615.0 -> 570.0	555777	20.58	µg/L	0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.9%		
13C2-PFTeDA	10.209	715.0 -> 670.0	493450	19.82	µg/L	0.004
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C3-PFBS	4.013	302.0 -> 99.0	10029	19.72	µg/L	0.009
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C3-PFHxS	5.975	402.0 -> 99.0	14256	20.00	µg/L	0.009
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C4-PFBA	2.027	217.0 -> 172.0	77645	20.10	µg/L	0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C4-PFHpA	5.939	367.0 -> 322.0	188945	20.35	µg/L	0.010
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
d5-EtFOSAA	7.759	589.0 -> 419.0	63083	20.78	ng/ml	-0.002
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C5-PFHxA	5.032	318.0 -> 273.0	135570	20.08	µg/L	0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C5-PFPeA	3.753	268.0 -> 223.0	91366	20.05	µg/L	0.016

Perfluorinated Compounds by LC/MS/MS

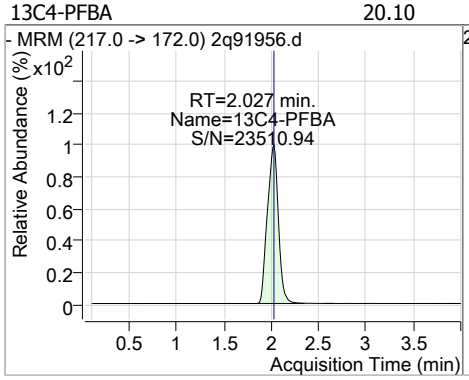
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C6-PFDA	7.775	519.0 -> 474.0	371869	20.42 µg/L		-0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C7-PFUnDA	8.267	570.0 -> 525.0	464901	20.55 µg/L		-0.002
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C8-FOSA	7.141	506.0 -> 78.0	77035	20.93 µg/L		-0.008
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C8-PFOA	6.649	421.0 -> 376.0	258549	20.08 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C8-PFOS	7.230	507.0 -> 99.0	21665	20.88 µg/L		0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C9-PFNA	7.257	472.0 -> 427.0	296435	20.32 µg/L		0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
d3-MeFOSAA	7.620	573.0 -> 419.0	76324	19.90 µg/L		-0.003
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%		
13C3-HFPO-DA	5.325	287.0 -> 169.0	5287	20.30 µg/L		0.006
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
d3-MeFOSA	7.547	515.0 -> 169.0	29693	21.21 µg/L		-0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.1%		
Target Compounds						QValue
4:2FTS	4.930	327.0 -> 307.0	2651	0.55 µg/L		100
6:2FTS	6.636	427.0 -> 407.0	4168	0.53 µg/L		95
8:2FTS	7.812	527.0 -> 507.0	3698	0.53 µg/L		84
EtFOSAA	7.759	584.0 -> 419.0	1811	0.58 µg/L		79
FOSA	7.142	498.0 -> 78.0	2166	0.54 µg/L		91
MeFOSAA	7.620	570.0 -> 419.0	1882	0.54 µg/L		84
PFBA	2.033	213.0 -> 169.0	1092	0.55 µg/L		100
PFBS	4.014	299.0 -> 80.0	944	0.56 µg/L		98
PFDA	7.775	513.0 -> 469.0	10435	0.55 µg/L		98
PFDoDA	8.823	613.0 -> 569.0	14116	0.53 µg/L		99
PFDS	8.215	599.0 -> 80.0	450	0.53 µg/L		85
PFHpA	5.939	363.0 -> 319.0	8557	0.55 µg/L		97
PFHpS	6.648	449.0 -> 80.0	878	0.52 µg/L		98
PFHxA	5.033	313.0 -> 269.0	2766	0.55 µg/L		99
PFHxS	5.976	399.0 -> 80.0	842	0.47 µg/L		98
PFNA	7.257	463.0 -> 419.0	8601	0.52 µg/L		99
PFNS	7.735	549.0 -> 80.0	823	0.54 µg/L		92
PFOA	6.649	413.0 -> 369.0	7824	0.56 µg/L		96
PFOS	7.230	499.0 -> 80.0	586	0.31 µg/L	#	53
PFPeA	3.753	263.0 -> 219.0	3925	0.56 µg/L		100
PFPeS	5.144	349.0 -> 80.0	641	0.56 µg/L		94
PFTeDA	10.197	713.0 -> 669.0	16429	0.55 µg/L		99
PFTrDA	9.517	663.0 -> 619.0	16494	0.53 µg/L		100
PFUnDA	8.267	563.0 -> 519.0	11245	0.53 µg/L		99
11Cl-PF3OUdS	8.442	631.0 -> 451.0	4435	0.50 µg/L		96
9Cl-PF3ONS	7.507	531.0 -> 351.0	1263	0.63 µg/L		98
ADONA	6.040	377.0 -> 251.0	10225	0.53 µg/L		99
HFPO-DA	5.321	329.0 -> 169.0	1202	0.63 µg/L		90
MeFOSA	7.548	512.0 -> 219.0	553	0.44 µg/L	#	59

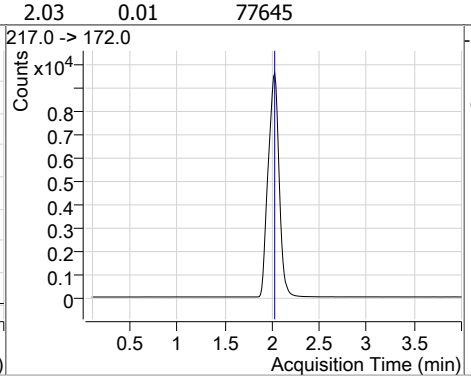
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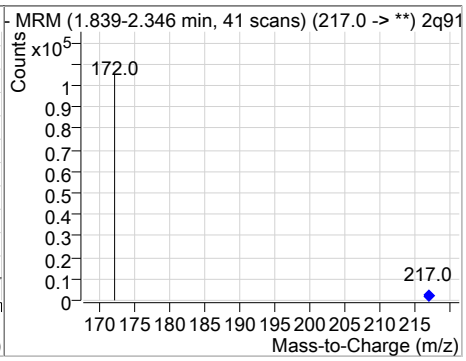
Perfluorinated Compounds by LC/MS/MS



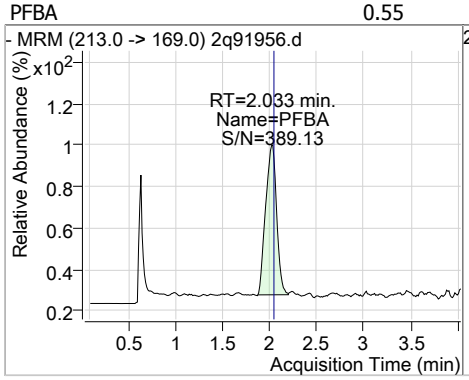
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.10	2.03	0.01	77645				

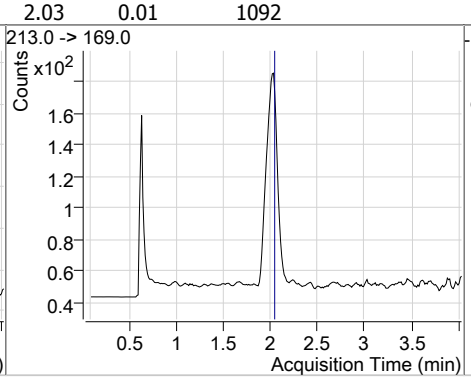


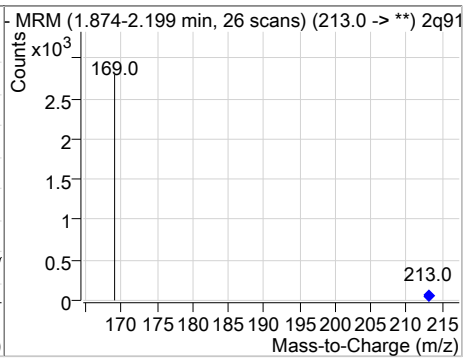




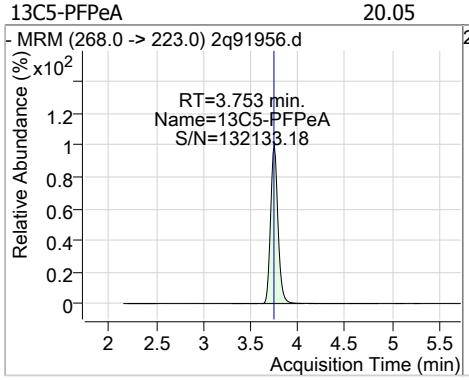
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.55	2.03	0.01	1092				

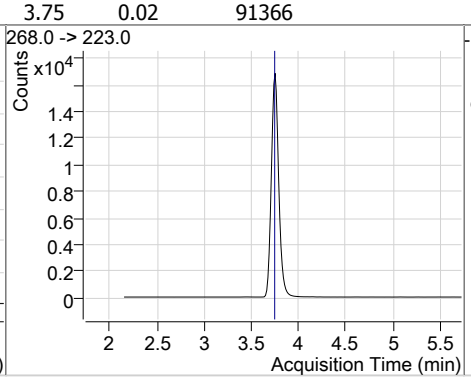


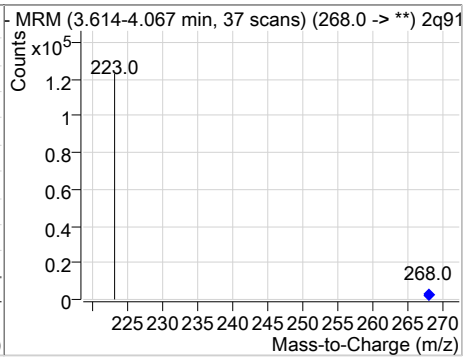




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.05	3.75	0.02	91366				

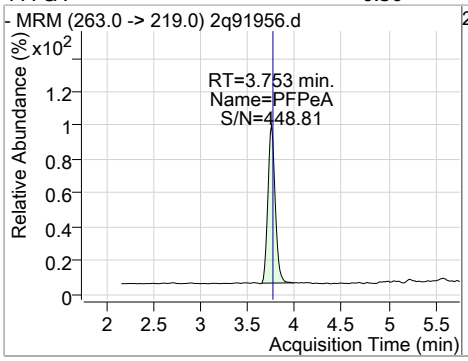


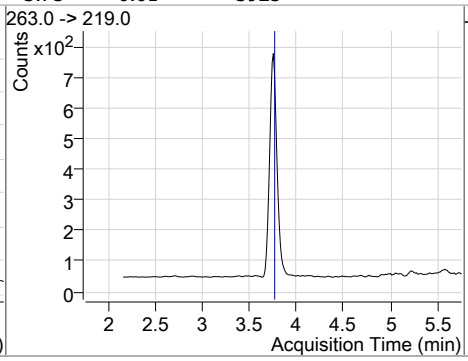


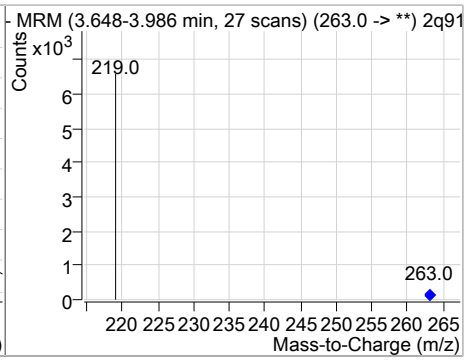


Perfluorinated Compounds by LC/MS/MS

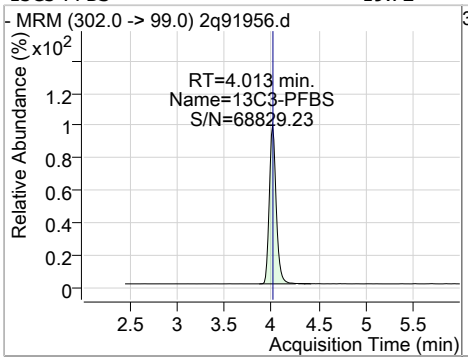
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.56	3.75	0.01	3925				

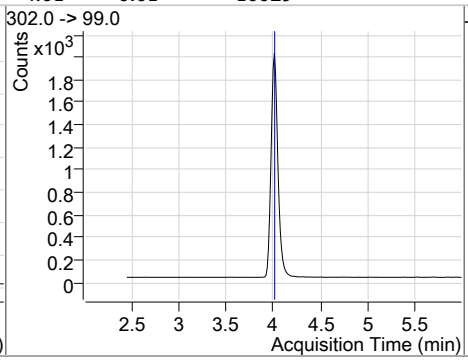


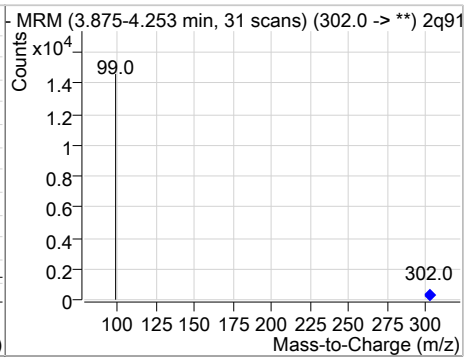




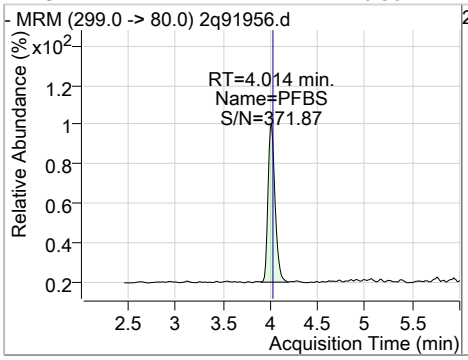
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.72	4.01	0.01	10029				

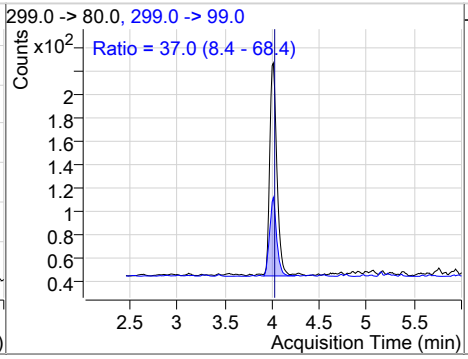


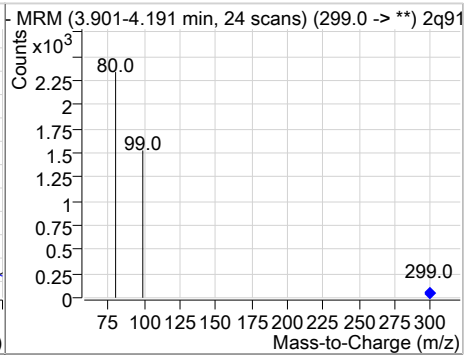




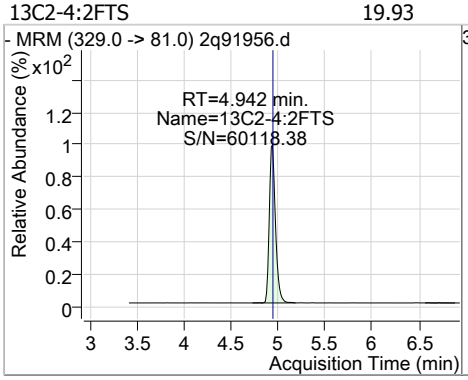
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.56	4.01	0.01	944	299.0 -> 99.0	37.0	8.4	68.4

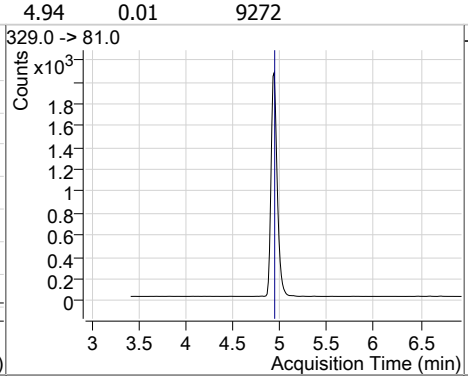


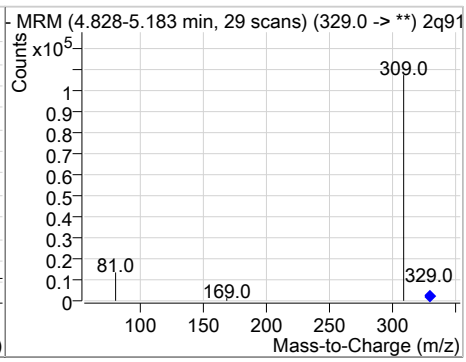




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.93	4.94	0.01	9272				

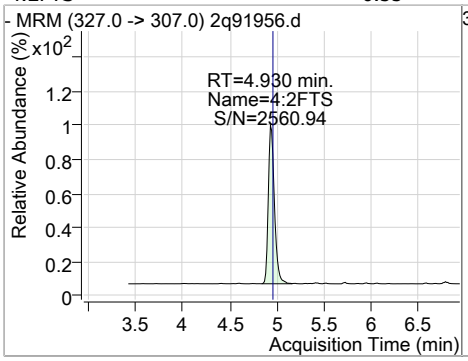


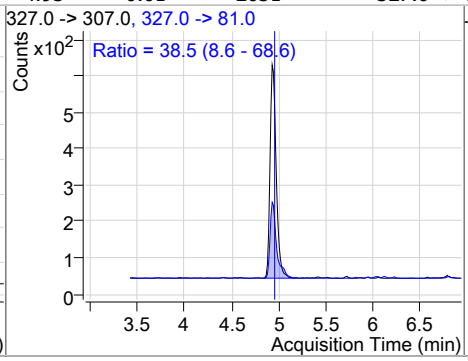


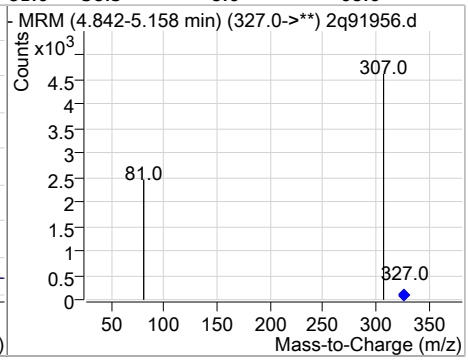


Perfluorinated Compounds by LC/MS/MS

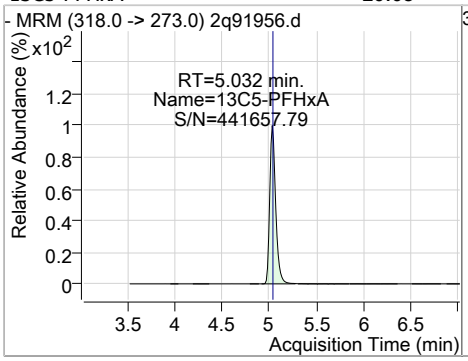
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.55	4.93	-0.01	2651	327.0 -> 81.0	38.5	8.6	68.6

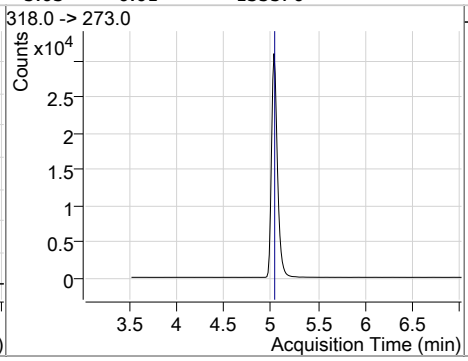


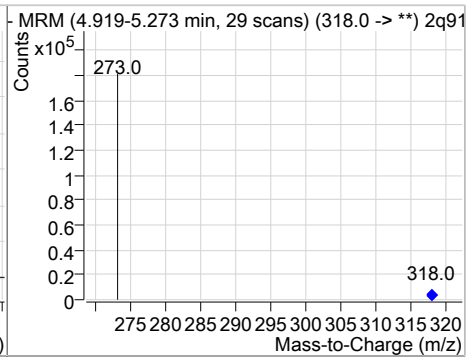




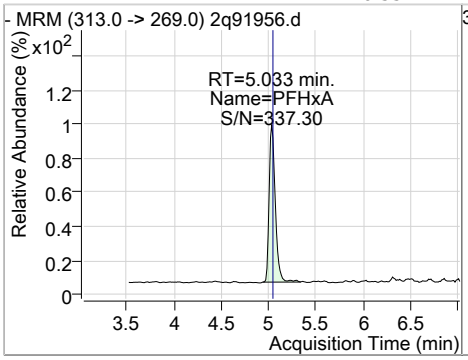
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.08	5.03	0.01	135570				

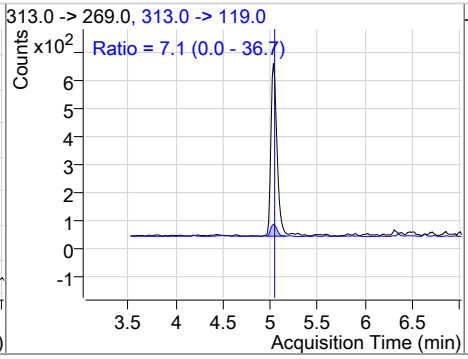


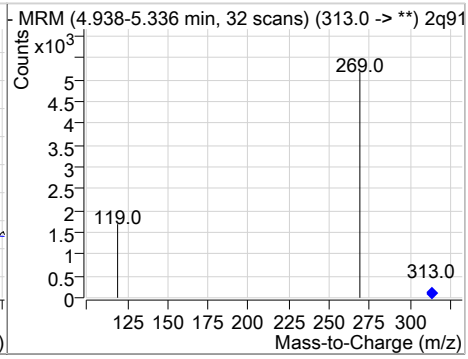




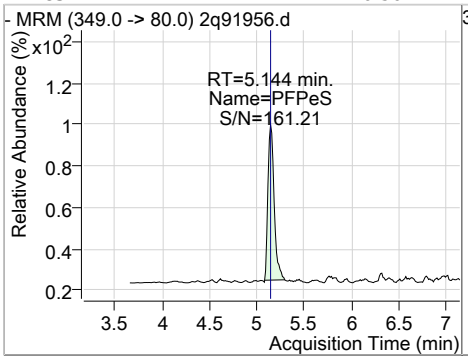
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.55	5.03	0.00	2766	313.0 -> 119.0	7.1	0.0	36.7

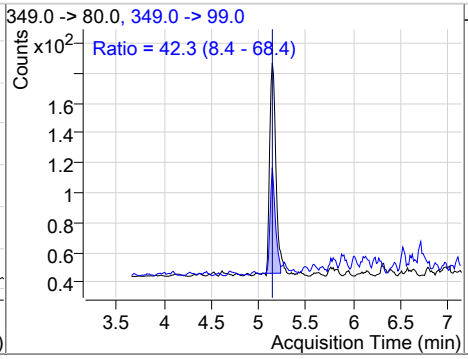


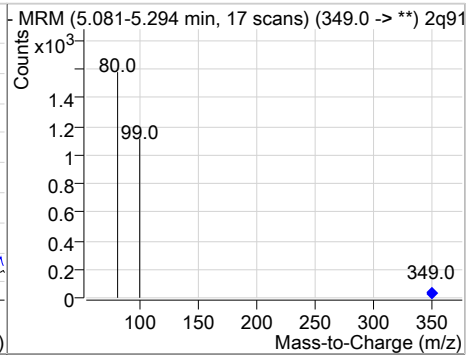




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.56	5.14	0.00	641	349.0 -> 99.0	42.3	8.4	68.4

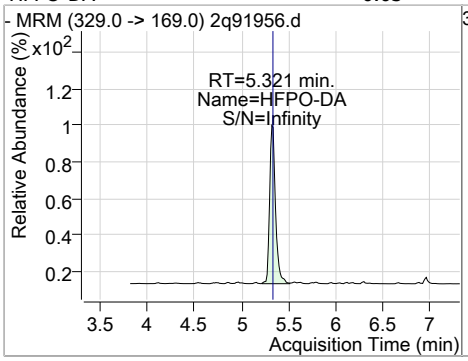


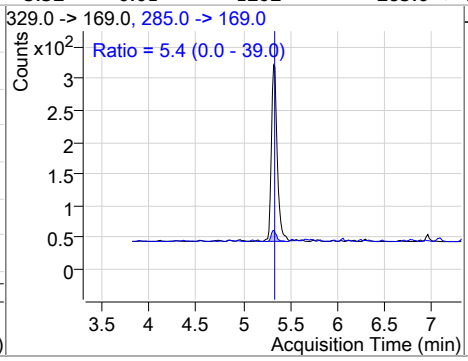


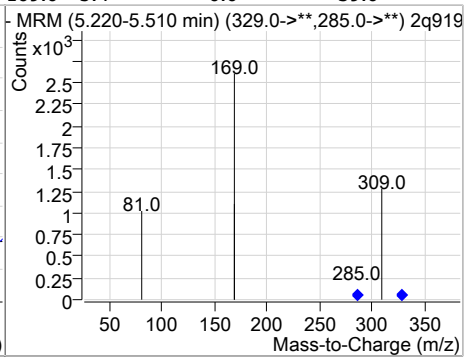


Perfluorinated Compounds by LC/MS/MS

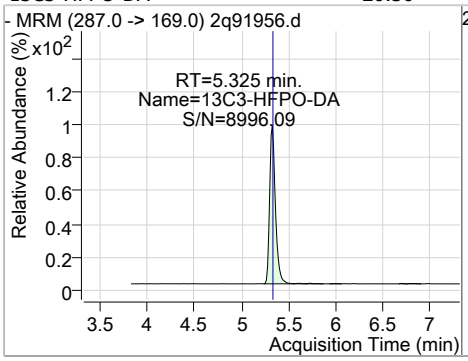
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.63	5.32	0.01	1202	285.0 -> 169.0	5.4	0.0	39.0

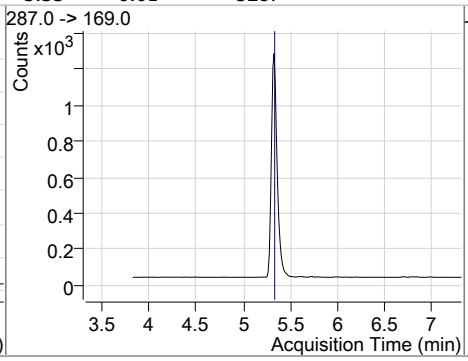


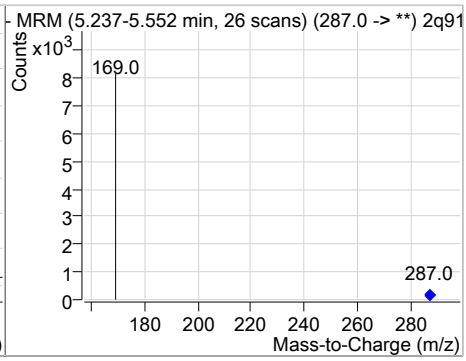




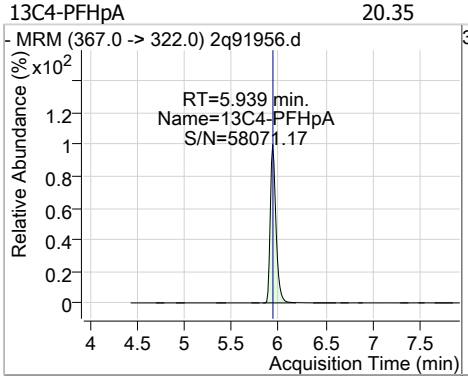
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.30	5.33	0.01	5287				

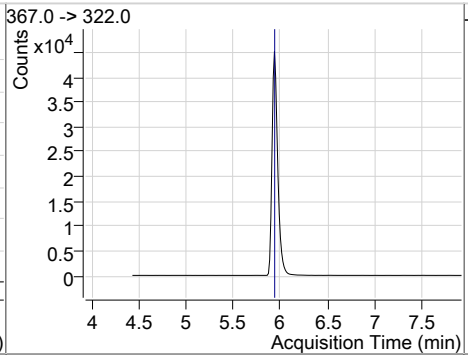


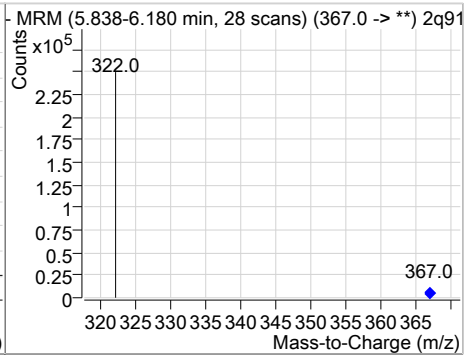




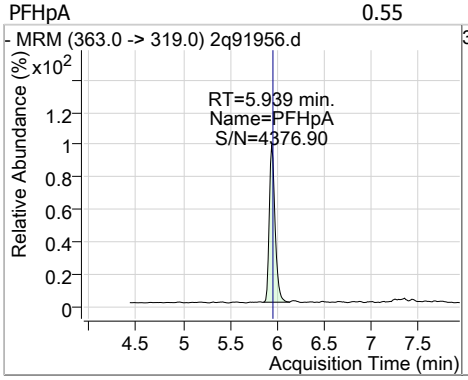
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.35	5.94	0.01	188945				

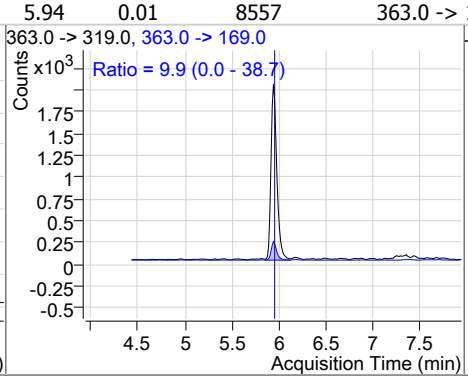


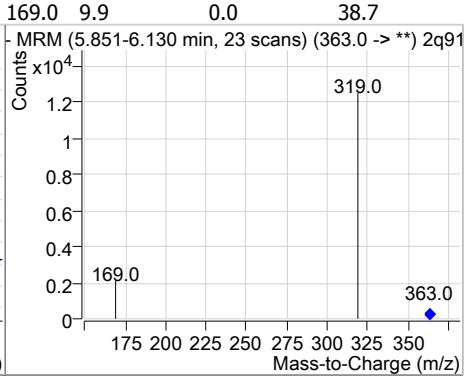




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.55	5.94	0.01	8557	363.0 -> 169.0	9.9	0.0	38.7

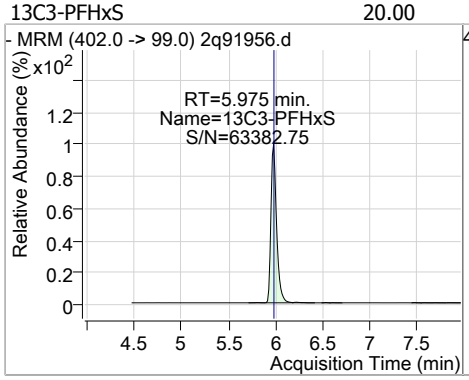


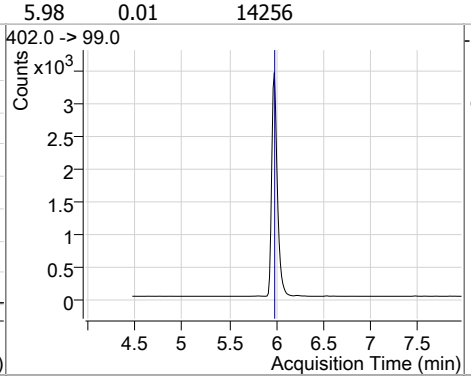


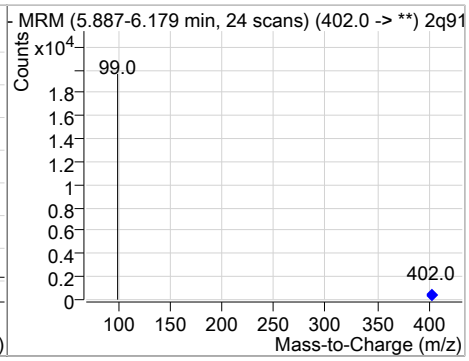


Perfluorinated Compounds by LC/MS/MS

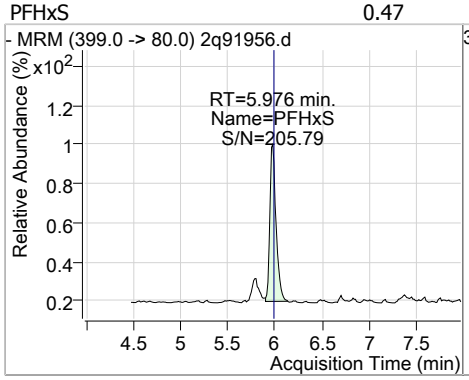
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.00	5.98	0.01	14256				

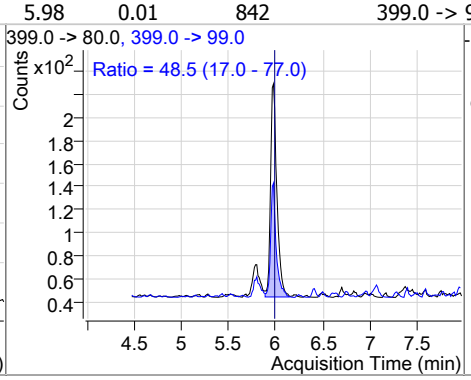


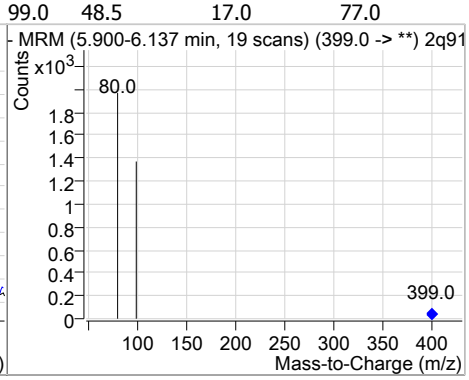




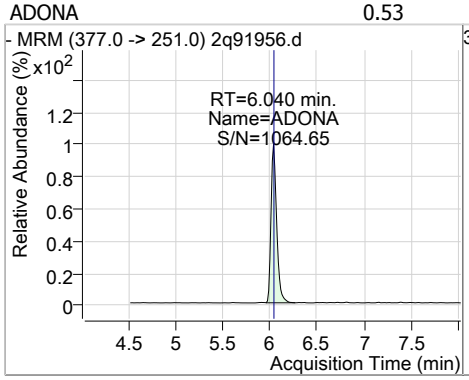
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.47	5.98	0.01	842	399.0 -> 99.0	48.5	17.0	77.0

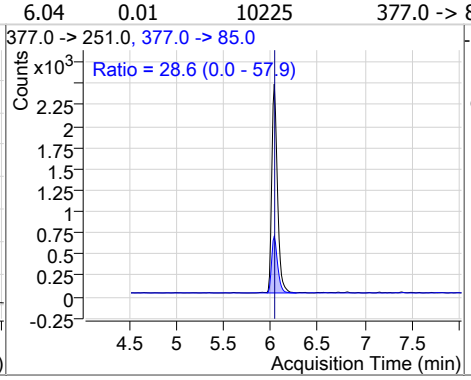


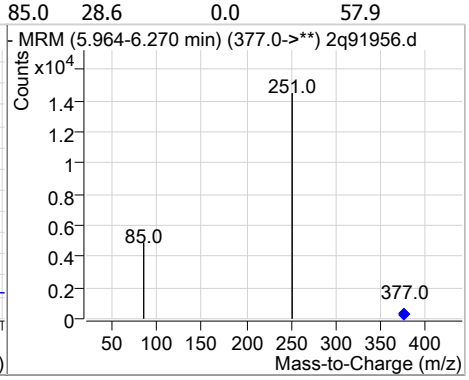




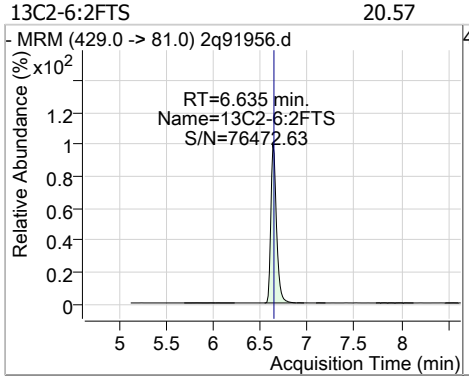
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.53	6.04	0.01	10225	377.0 -> 85.0	28.6	0.0	57.9

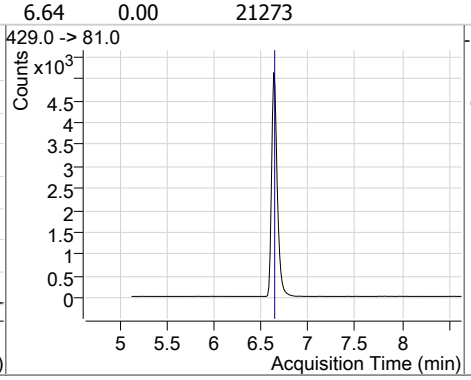


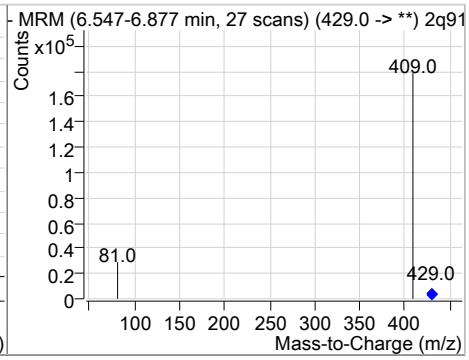




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.57	6.64	0.00	21273				

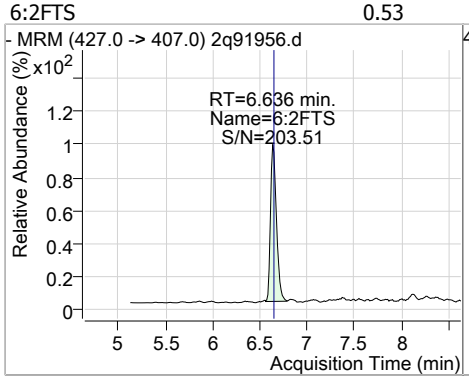


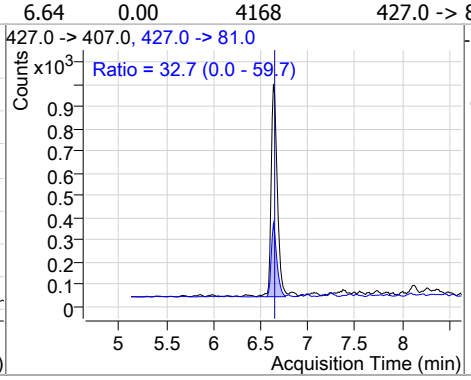


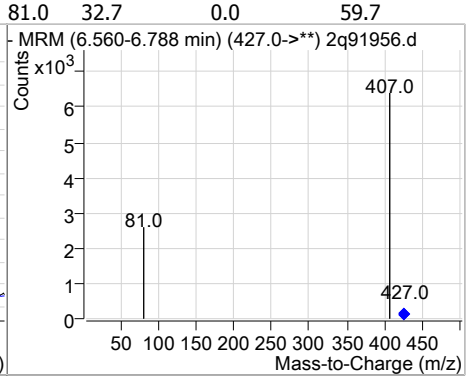


Perfluorinated Compounds by LC/MS/MS

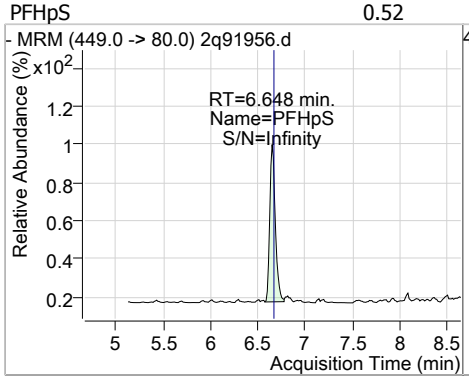
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.53	6.64	0.00	4168	427.0 -> 81.0	32.7	0.0	59.7

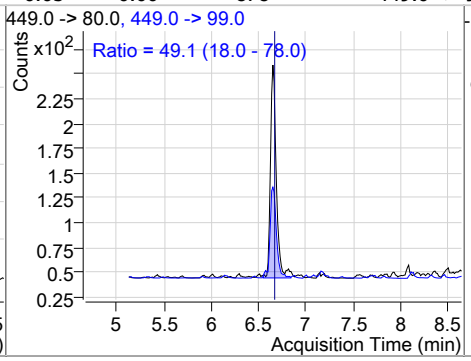


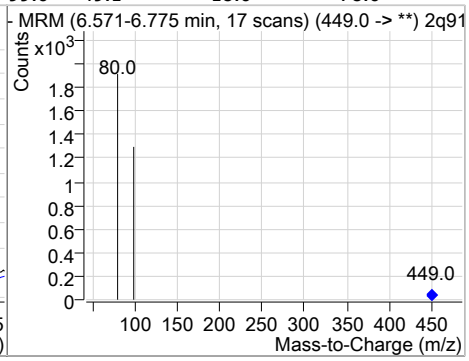




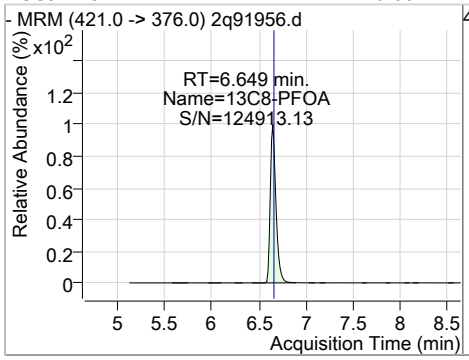
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.52	6.65	0.00	878	449.0 -> 99.0	49.1	18.0	78.0

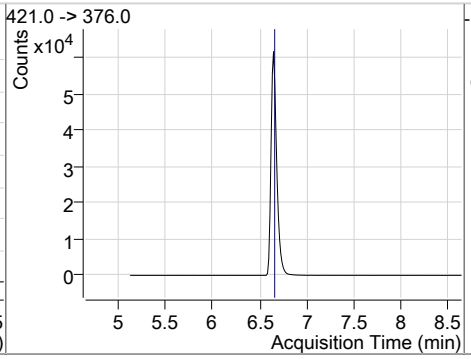


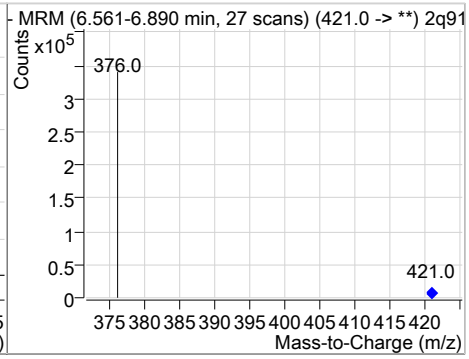




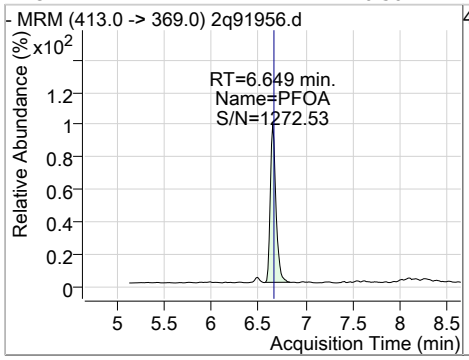
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.08	6.65	0.00	258549				

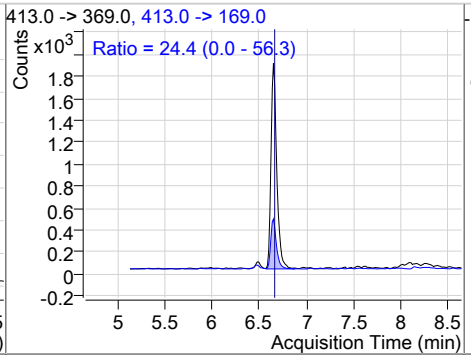


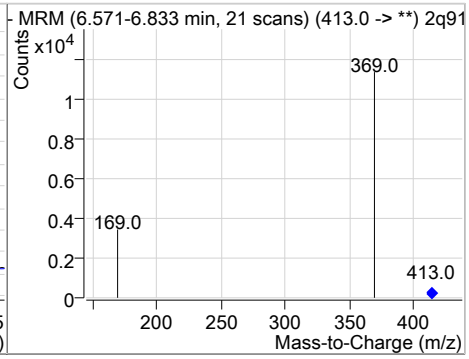




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.56	6.65	0.00	7824	413.0 -> 169.0	24.4	0.0	56.3

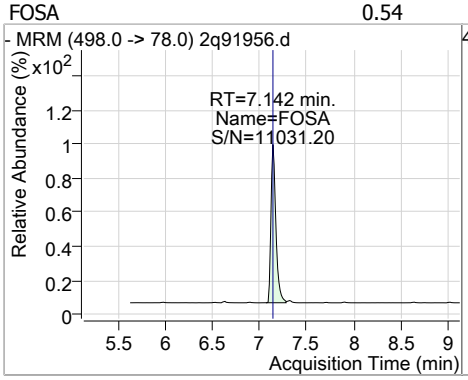


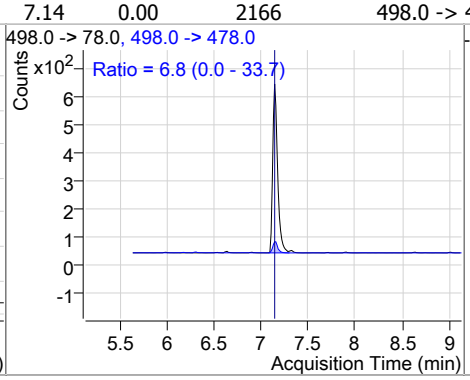


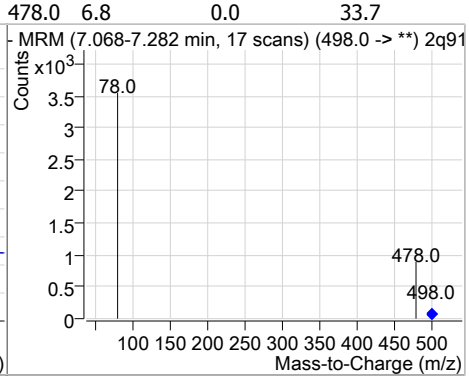


Perfluorinated Compounds by LC/MS/MS

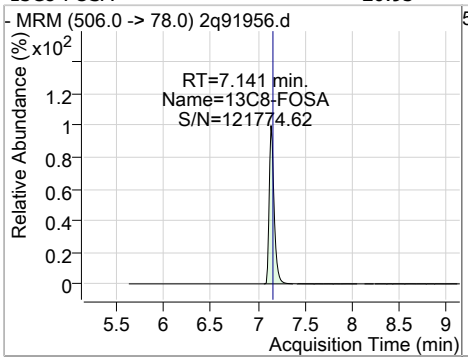
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.54	7.14	0.00	2166	498.0 -> 478.0	6.8	0.0	33.7

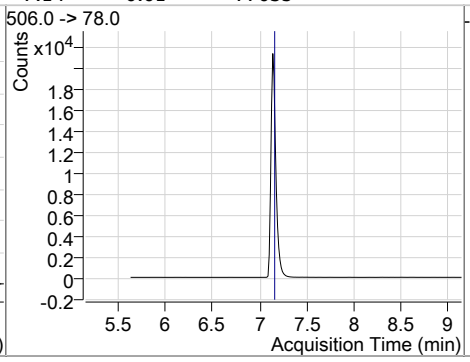


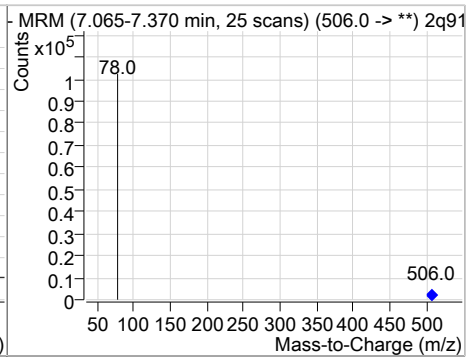




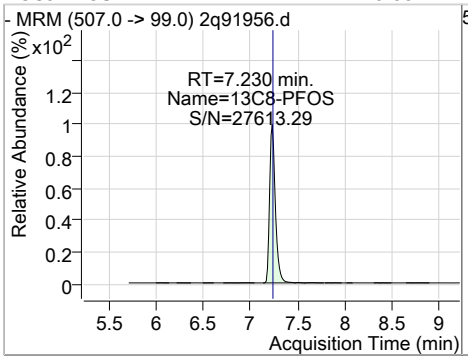
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.93	7.14	-0.01	77035				

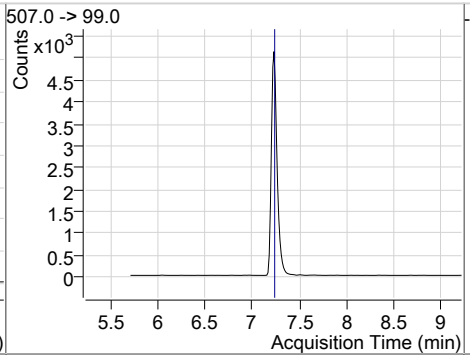


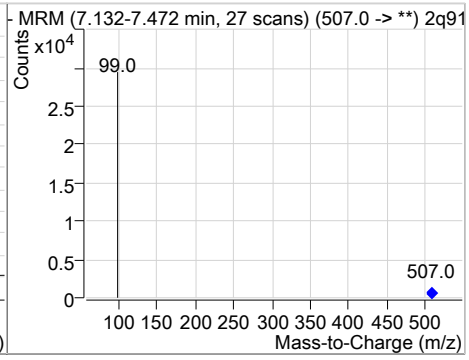




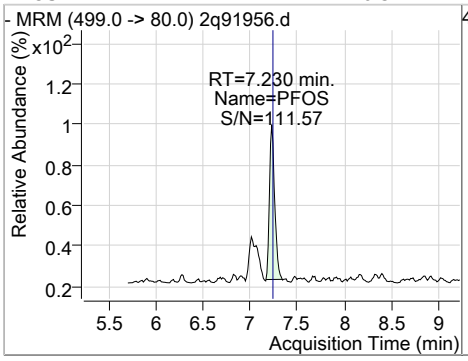
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.88	7.23	0.01	21665				

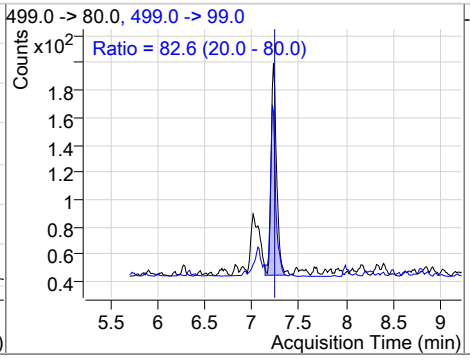


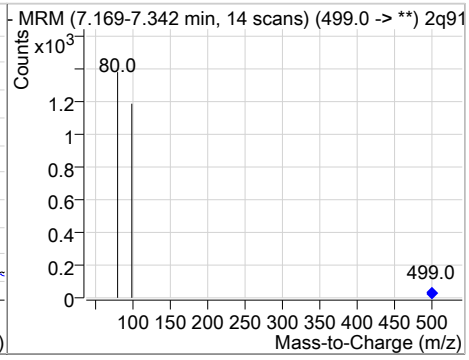




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.31	7.23	0.01	586	499.0 -> 99.0	82.6	20.0	80.0

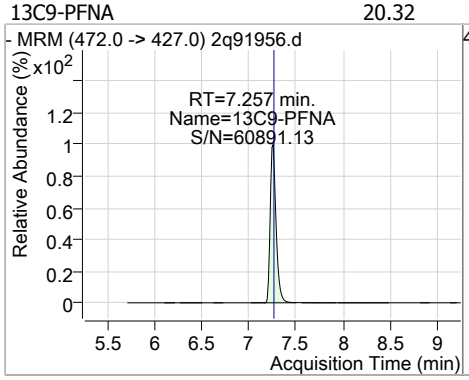


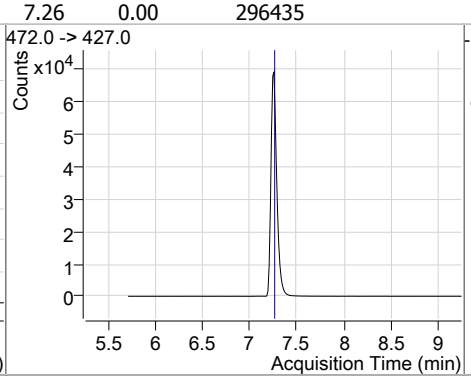


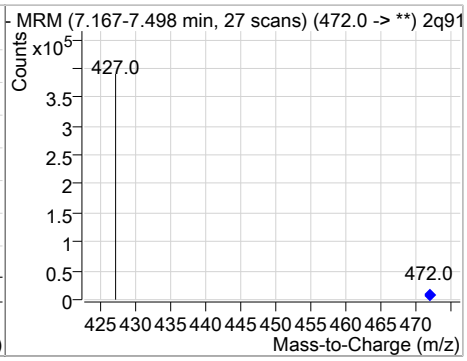


Perfluorinated Compounds by LC/MS/MS

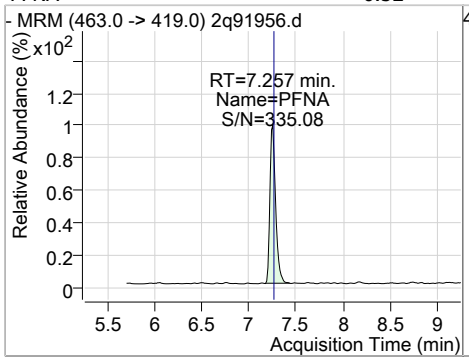
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.32	7.26	0.00	296435				

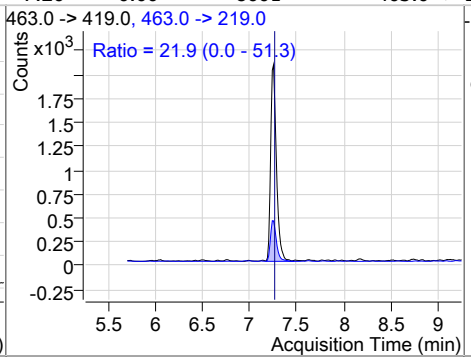


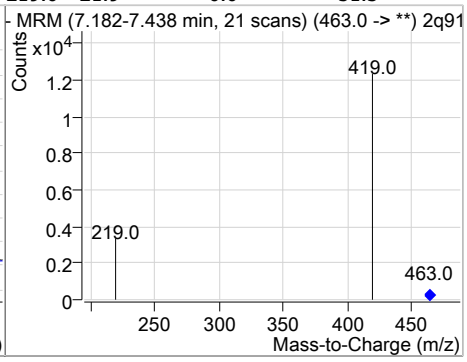




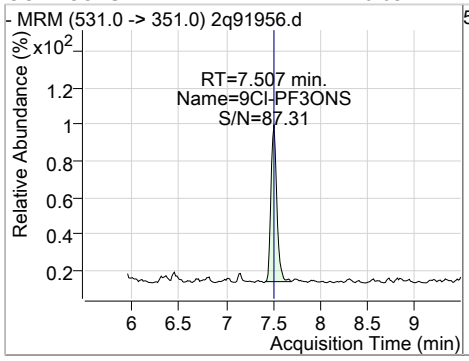
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.52	7.26	0.00	8601	463.0 -> 219.0	21.9	0.0	51.3

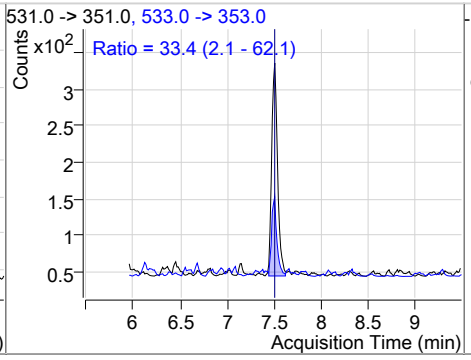


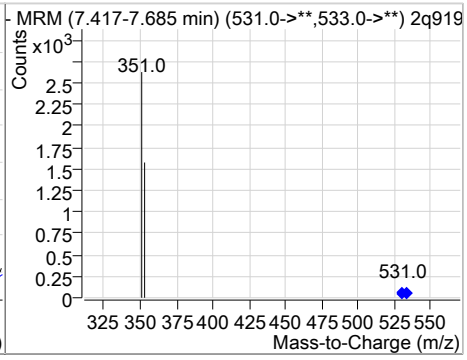




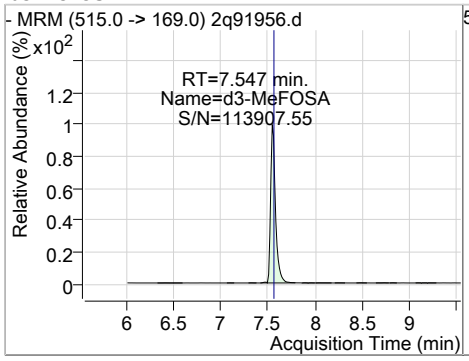
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.63	7.51	0.01	1263	533.0 -> 353.0	33.4	2.1	62.1

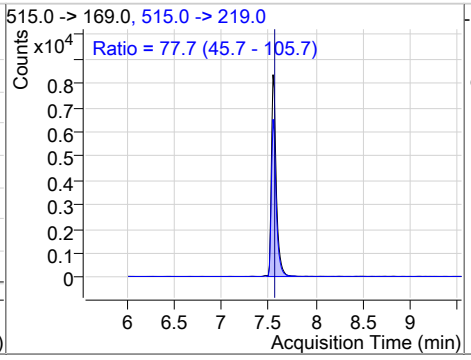


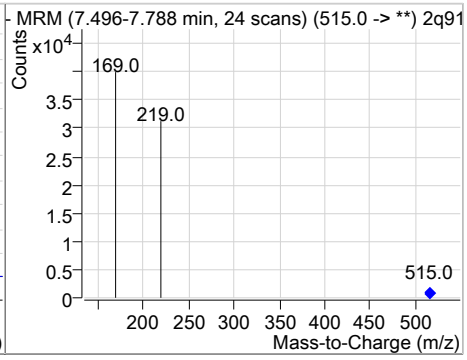




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	21.21	7.55	-0.01	29693	515.0 -> 219.0	77.7	45.7	105.7

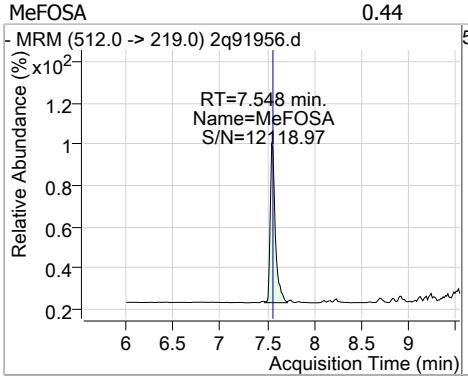


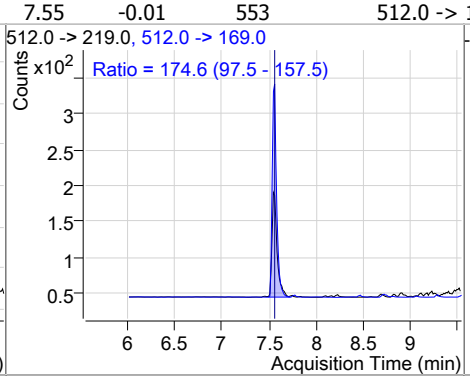


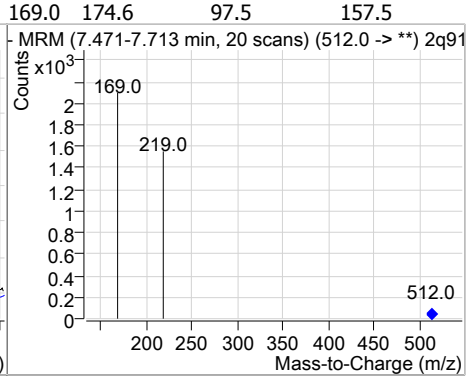


Perfluorinated Compounds by LC/MS/MS

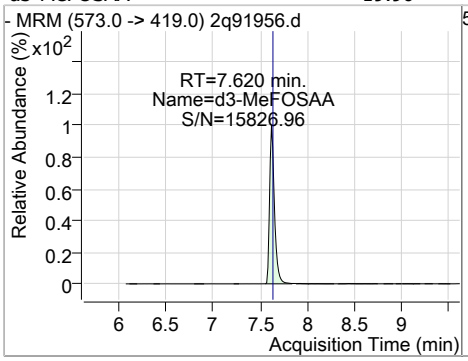
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.44	7.55	-0.01	553	512.0 -> 169.0	174.6	97.5	157.5

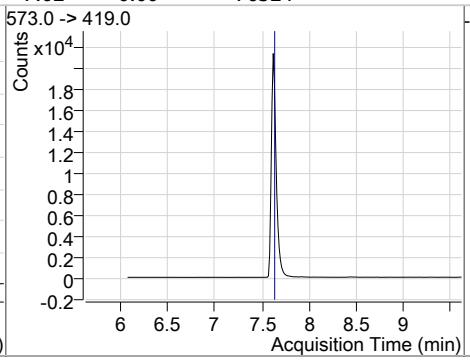


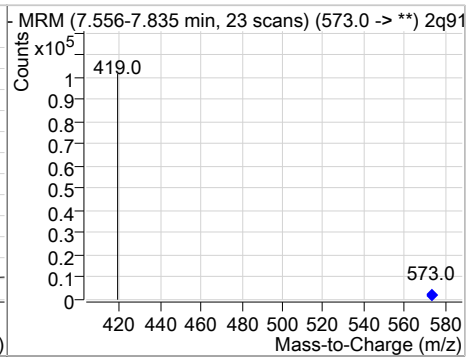




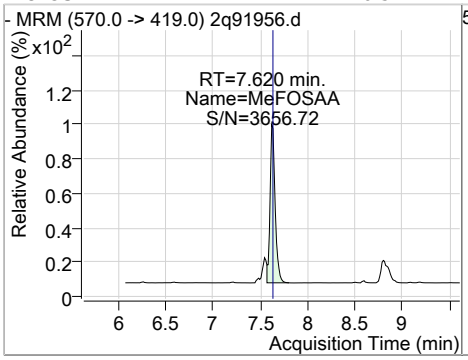
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.90	7.62	0.00	76324				

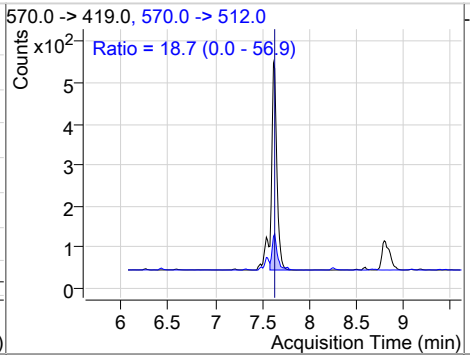


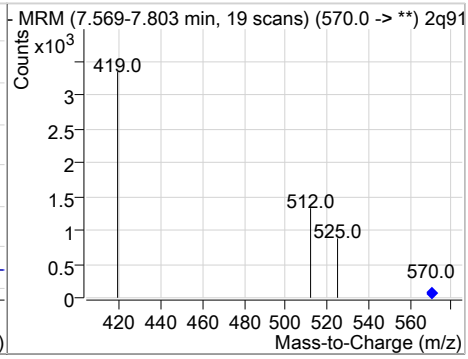




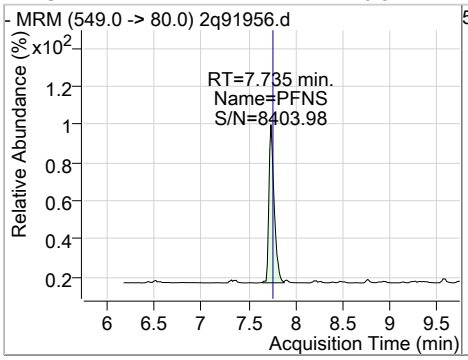
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.54	7.62	0.00	1882	570.0 -> 512.0	18.7	0.0	56.9

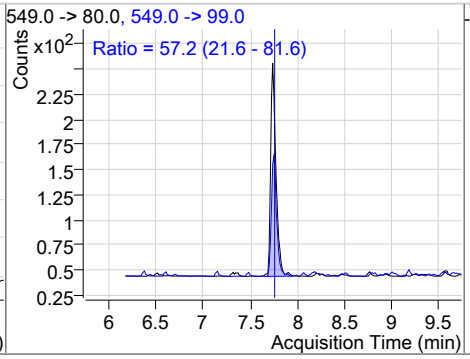


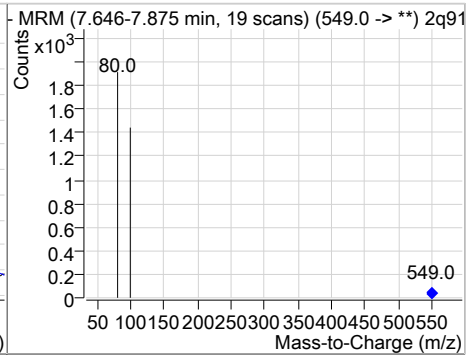




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.54	7.74	0.00	823	549.0 -> 99.0	57.2	21.6	81.6

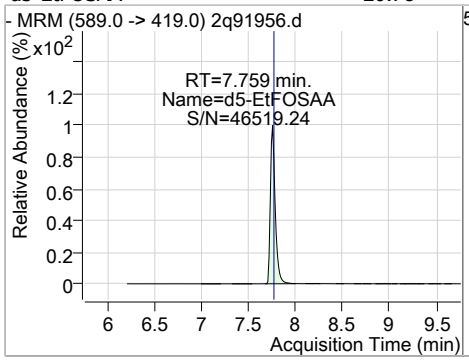


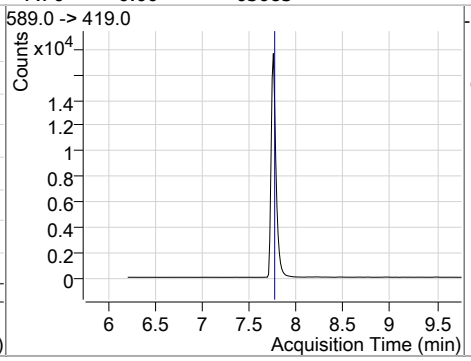


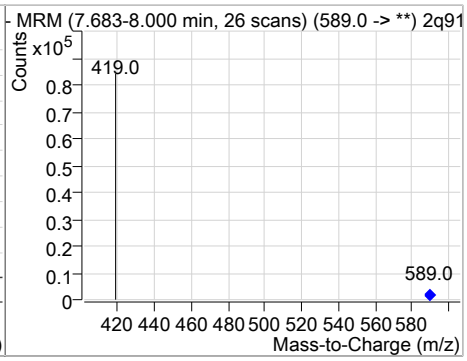


Perfluorinated Compounds by LC/MS/MS

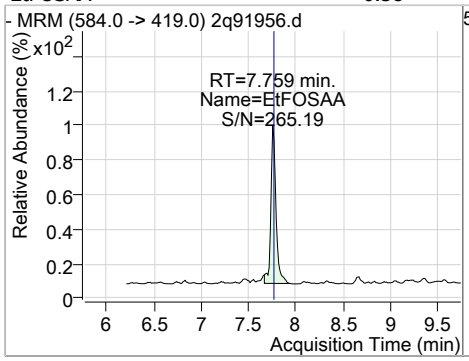
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	20.78	7.76	0.00	63083				

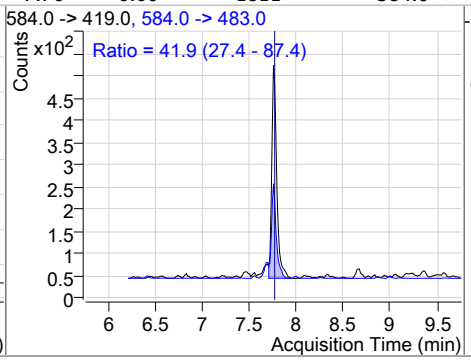


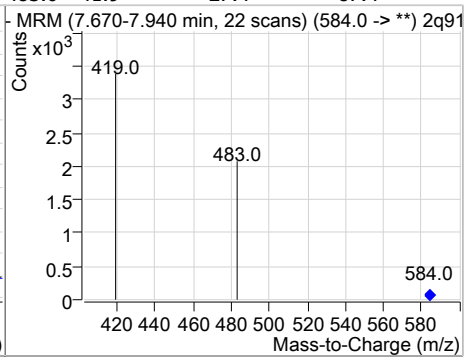




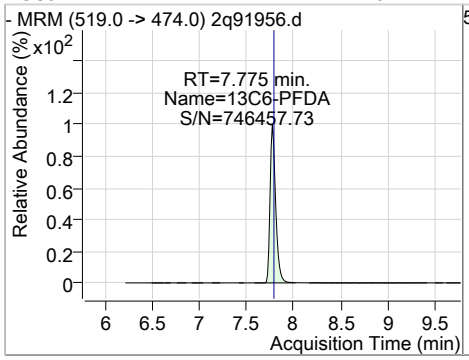
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.58	7.76	0.00	1811	584.0 -> 483.0	41.9	27.4	87.4

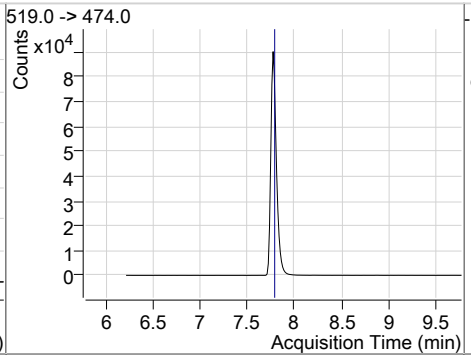


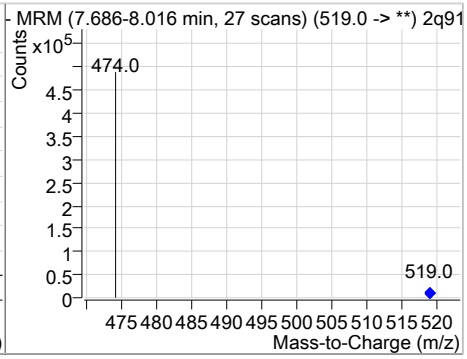




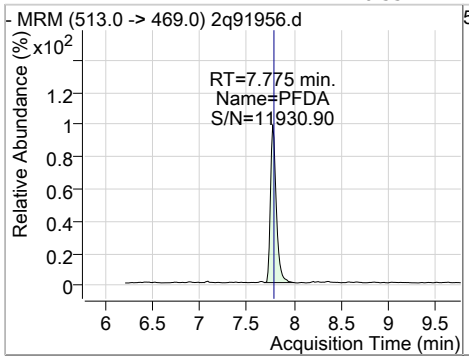
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.42	7.77	0.00	371869				

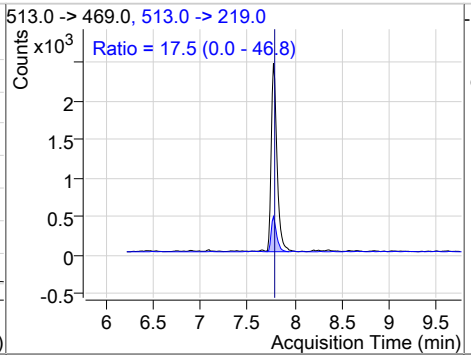


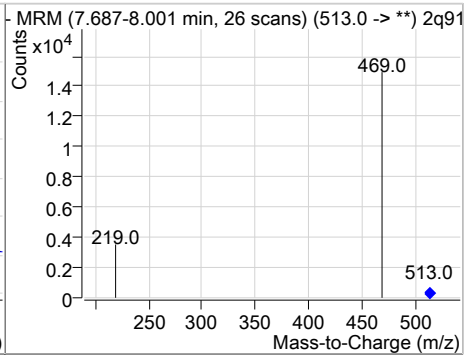




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.55	7.78	0.00	10435	513.0 -> 219.0	17.5	0.0	46.8

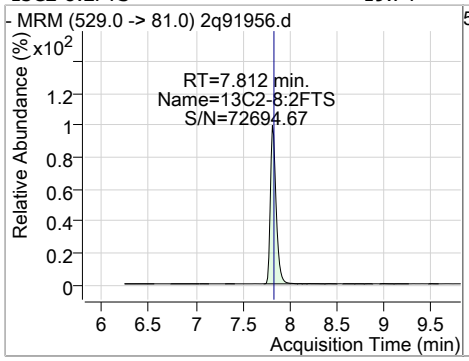


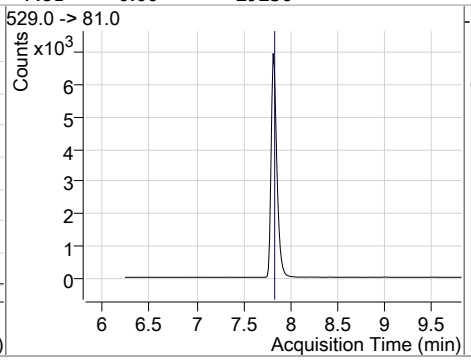


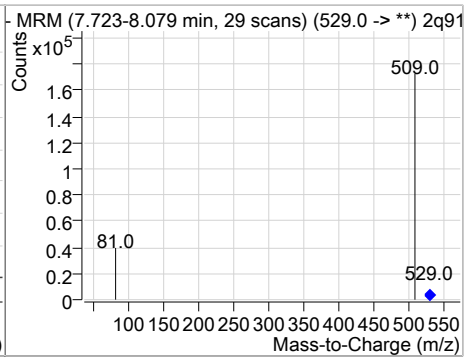


Perfluorinated Compounds by LC/MS/MS

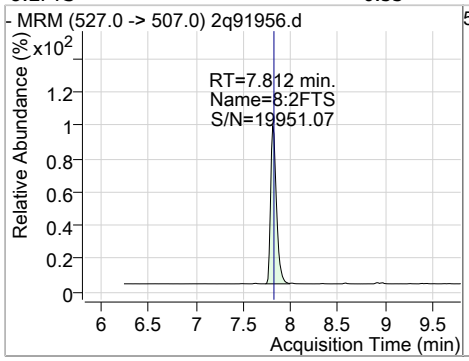
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.74	7.81	0.00	29230				

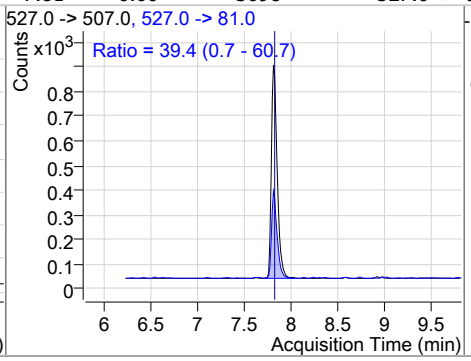


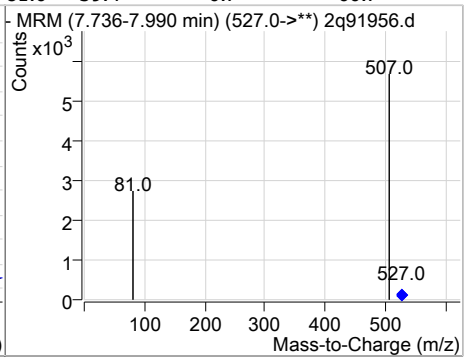




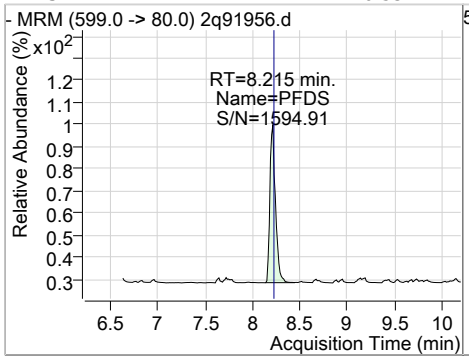
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.53	7.81	0.00	3698	527.0 -> 81.0	39.4	0.7	60.7

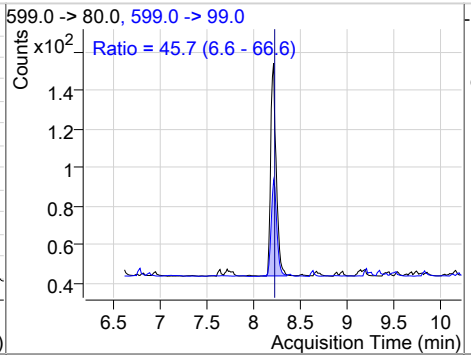


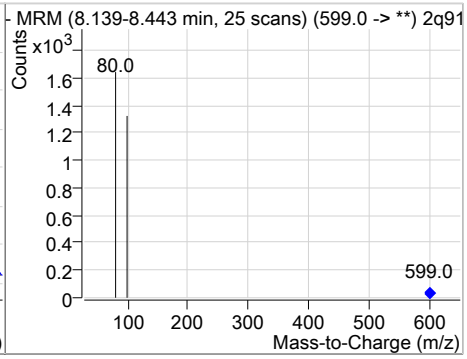




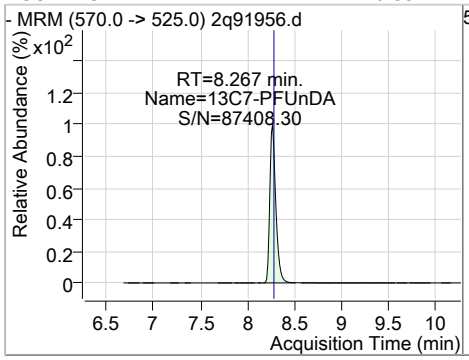
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.53	8.21	0.00	450	599.0 -> 99.0	45.7	6.6	66.6

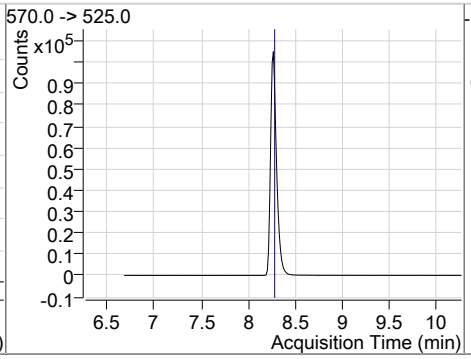


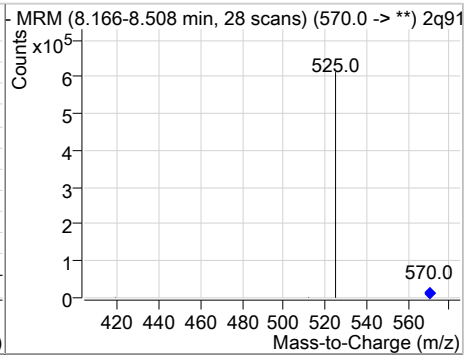




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.55	8.27	0.00	464901				

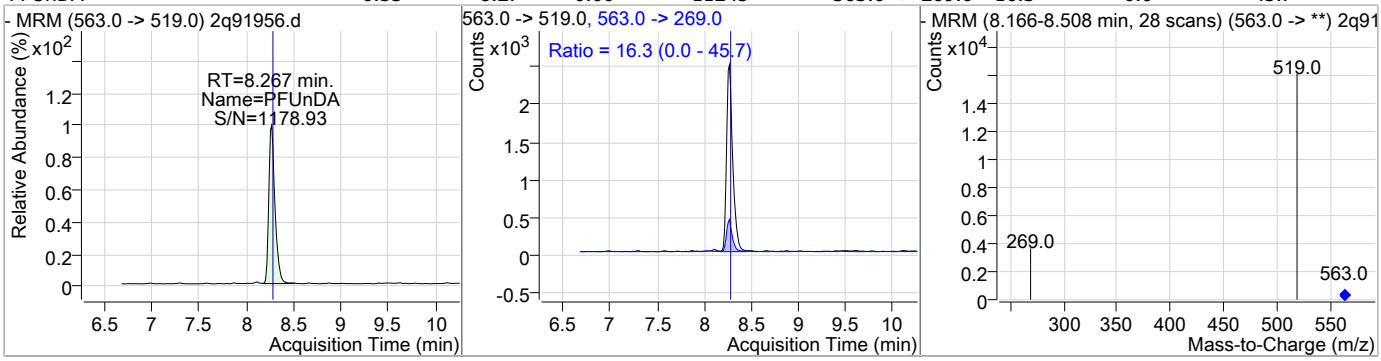




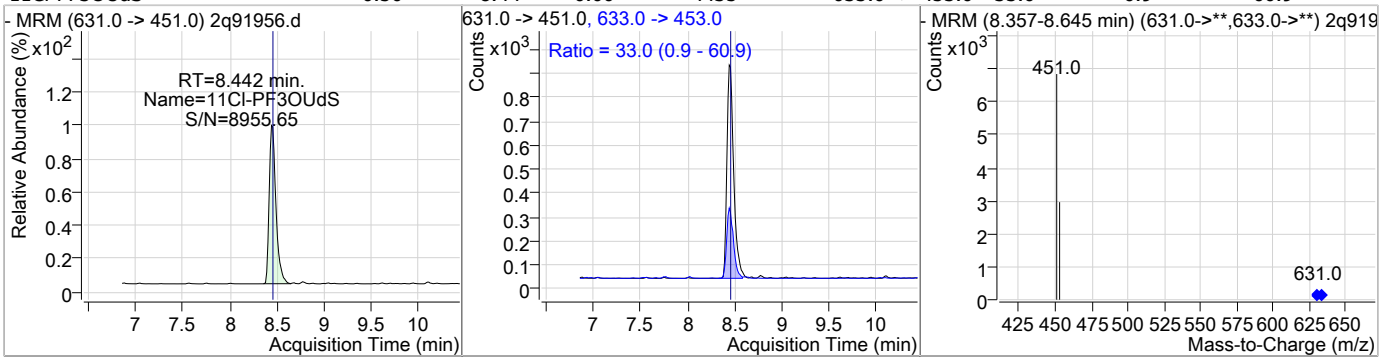


Perfluorinated Compounds by LC/MS/MS

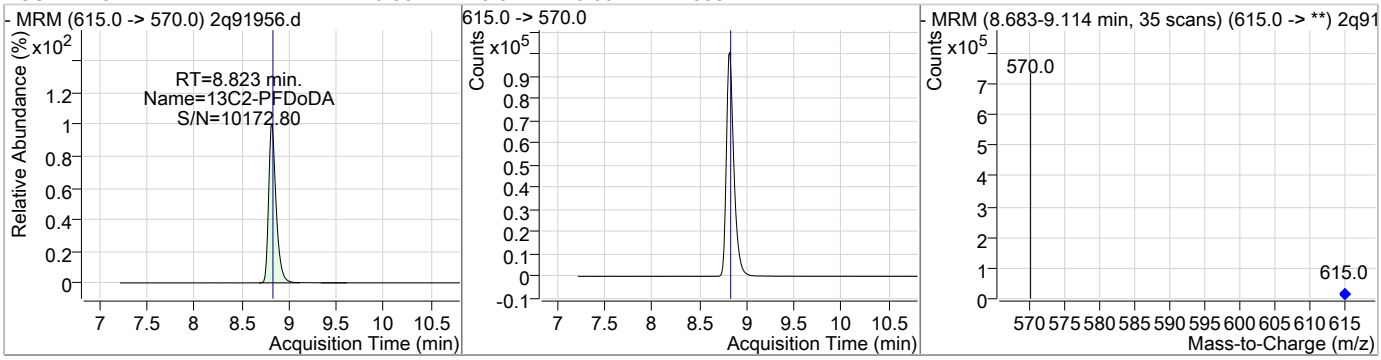
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.53	8.27	0.00	11245	563.0 -> 269.0	16.3	0.0	45.7



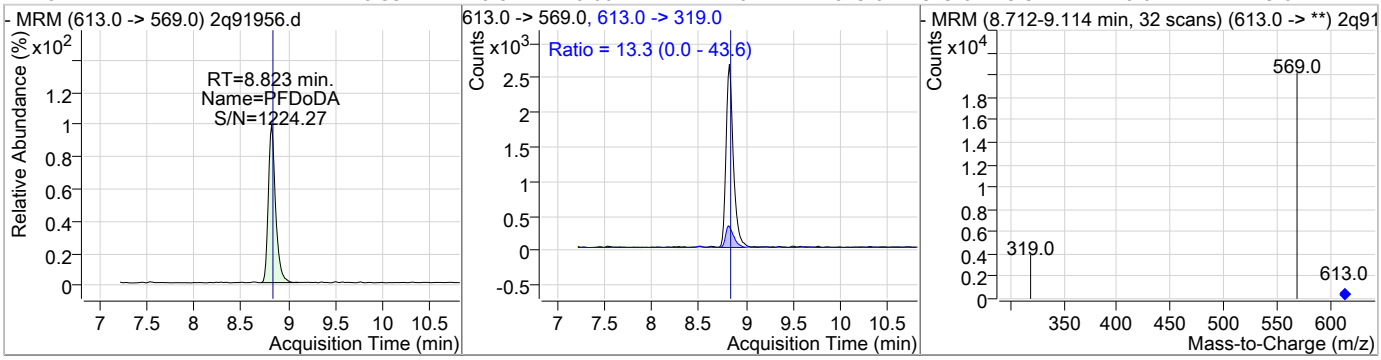
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.50	8.44	0.00	4435	633.0 -> 453.0	33.0	0.9	60.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.58	8.82	0.00	555777				

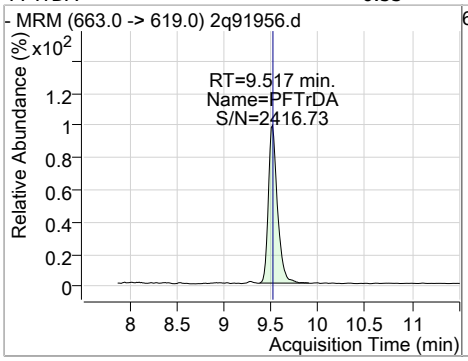


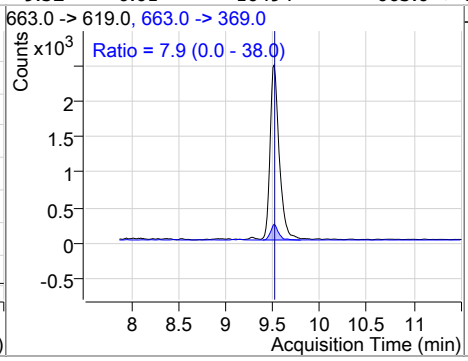
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.53	8.82	0.00	14116	613.0 -> 319.0	13.3	0.0	43.6

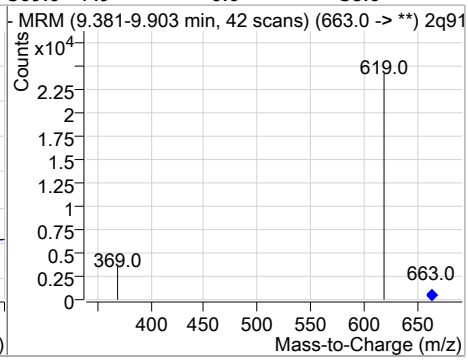


Perfluorinated Compounds by LC/MS/MS

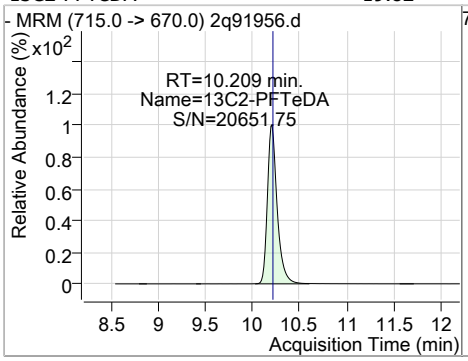
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.53	9.52	0.01	16494	663.0 -> 369.0	7.9	0.0	38.0

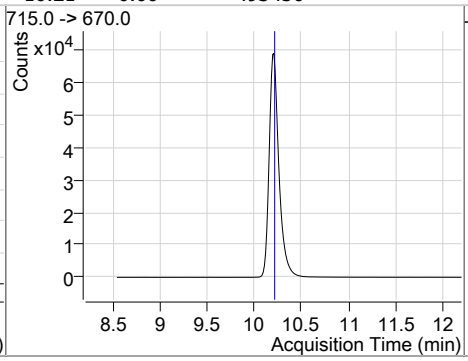


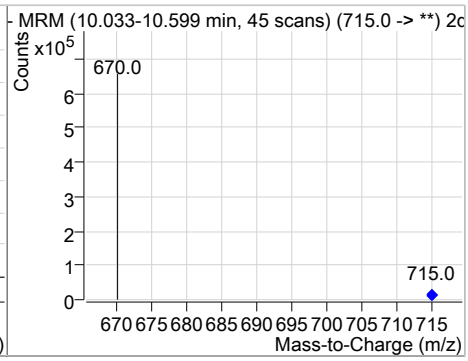




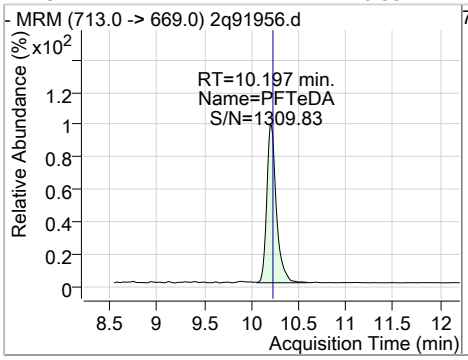
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.82	10.21	0.00	493450				

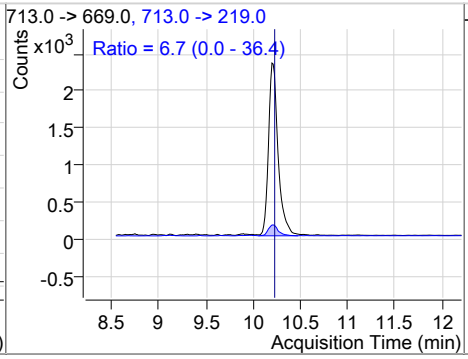


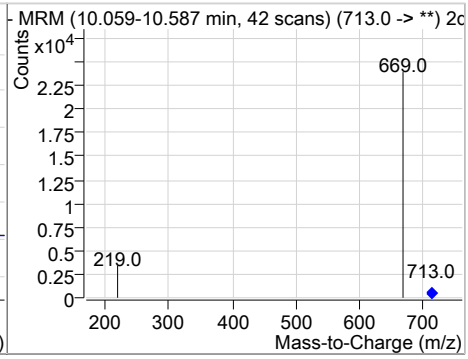




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.55	10.20	-0.01	16429	713.0 -> 219.0	6.7	0.0	36.4







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91957.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 12:18:04 PM
Sample Name : ic1287-1
Vial : P1-A3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

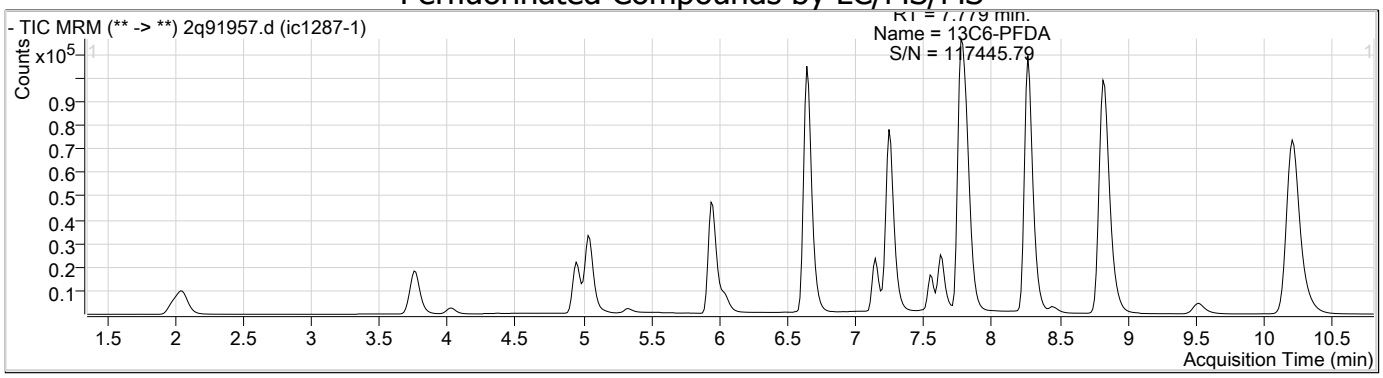
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	61503	20.00	µg/L	0.000
M4-PFBA	2.039	217.0 -> 172.0	75406	20.00	µg/L	0.025
M5-PFPeA	3.761	268.0 -> 223.0	89581	20.00	µg/L	0.025
M5-PFHxA	5.039	318.0 -> 273.0	133186	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	181421	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	255163	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	286899	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	366027	20.00	µg/L	0.000
M7-PFUnDA	8.268	570.0 -> 525.0	450941	20.00	µg/L	0.000
M2-PFDoDA	8.818	615.0 -> 570.0	530105	20.00	µg/L	0.000
M2-PFTeDA	10.205	715.0 -> 670.0	495690	20.00	µg/L	0.000
M8-FOSA	7.149	506.0 -> 78.0	75214	20.00	µg/L	0.000
M3-PFBS	4.029	302.0 -> 99.0	9979	20.00	µg/L	0.025
M3-PFHxS	5.979	402.0 -> 99.0	14551	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	20342	20.00	µg/L	0.013
M2-4:2FTS	4.946	329.0 -> 81.0	9104	20.00	µg/L	0.013
M2-6:2FTS	6.646	429.0 -> 81.0	20775	20.00	µg/L	0.013
M2-8:2FTS	7.816	529.0 -> 81.0	29489	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	77304	20.00	µg/L	0.000
M3-HFPO-DA	5.332	287.0 -> 169.0	5114	20.00	µg/L	0.013
M3-MeFOSA	7.552	515.0 -> 169.0	27968	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.946	329.0 -> 81.0	9104	19.57	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%		
13C2-6:2FTS	6.646	429.0 -> 81.0	20775	20.09	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C2-8:2FTS	7.816	529.0 -> 81.0	29489	19.91	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C2-PFDoDA	8.818	615.0 -> 570.0	530105	19.62	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C2-PFTeDA	10.205	715.0 -> 670.0	495690	19.91	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C3-PFBS	4.029	302.0 -> 99.0	9979	19.62	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C3-PFHxS	5.979	402.0 -> 99.0	14551	20.41	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C4-PFBA	2.039	217.0 -> 172.0	75406	19.52	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%		
13C4-PFHpA	5.941	367.0 -> 322.0	181421	19.54	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
d5-EtFOSAA	7.760	589.0 -> 419.0	61503	20.26	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C5-PFHxA	5.039	318.0 -> 273.0	133186	19.72	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C5-PFPeA	3.761	268.0 -> 223.0	89581	19.65	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

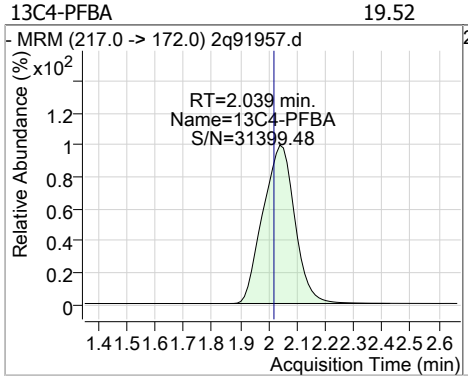
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.3%			
13C6-PFDA	7.779	519.0 -> 474.0	366027	20.10	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%			
13C7-PFUnDA	8.268	570.0 -> 525.0	450941	19.93	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
13C8-FOSA	7.149	506.0 -> 78.0	75214	20.44	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%			
13C8-PFOA	6.649	421.0 -> 376.0	255163	19.82	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%			
13C8-PFOS	7.237	507.0 -> 99.0	20342	19.60	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%			
13C9-PFNA	7.252	472.0 -> 427.0	286899	19.67	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%			
d3-MeFOSAA	7.623	573.0 -> 419.0	77304	20.16	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%			
13C3-HFPO-DA	5.332	287.0 -> 169.0	5114	19.64	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.2%			
d3-MeFOSA	7.552	515.0 -> 169.0	27968	19.98	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
Target Compounds							**QValue**
4:2FTS	4.950	327.0 -> 307.0	4831	1.01	µg/L		97
6:2FTS	6.647	427.0 -> 407.0	7713	1.01	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	7085	1.01	µg/L		97
EtFOSAA	7.761	584.0 -> 419.0	3076	1.00	µg/L	m	99
FOSA	7.150	498.0 -> 78.0	3852	0.98	µg/L		95
MeFOSAA	7.636	570.0 -> 419.0	3453	0.97	µg/L	m	93
PFBA	2.046	213.0 -> 169.0	1993	1.03	µg/L		100
PFBS	4.019	299.0 -> 80.0	1727	1.04	µg/L		99
PFDA	7.780	513.0 -> 469.0	18194	0.98	µg/L		98
PFDoDA	8.819	613.0 -> 569.0	24523	0.96	µg/L		99
PFDS	8.215	599.0 -> 80.0	851	1.03	µg/L		95
PFHpA	5.943	363.0 -> 319.0	14628	0.99	µg/L		99
PFHpS	6.645	449.0 -> 80.0	1638	0.96	µg/L		96
PFHxA	5.041	313.0 -> 269.0	5046	1.02	µg/L		97
PFHxS	5.980	399.0 -> 80.0	1979	1.08	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	15432	0.97	µg/L		96
PFNS	7.738	549.0 -> 80.0	1438	1.00	µg/L		89
PFOA	6.649	413.0 -> 369.0	13943	1.01	µg/L		99
PFOS	7.238	499.0 -> 80.0	1815	1.02	µg/L	m	94
PFPeA	3.764	263.0 -> 219.0	7002	1.01	µg/L		100
PFPeS	5.158	349.0 -> 80.0	1184	1.04	µg/L		96
PFTeDA	10.210	713.0 -> 669.0	29819	0.99	µg/L		99
PFTrDA	9.524	663.0 -> 619.0	28805	0.97	µg/L		98
PFUnDA	8.270	563.0 -> 519.0	20037	0.97	µg/L		99
11Cl-PF3OUdS	8.453	631.0 -> 451.0	8267	0.97	µg/L		99
9Cl-PF3ONS	7.511	531.0 -> 351.0	1911	0.96	µg/L		94
ADONA	6.044	377.0 -> 251.0	18301	0.95	µg/L		100
HFPO-DA	5.339	329.0 -> 169.0	1853	1.01	µg/L		99
MeFOSA	7.566	512.0 -> 219.0	1383	1.17	µg/L		86

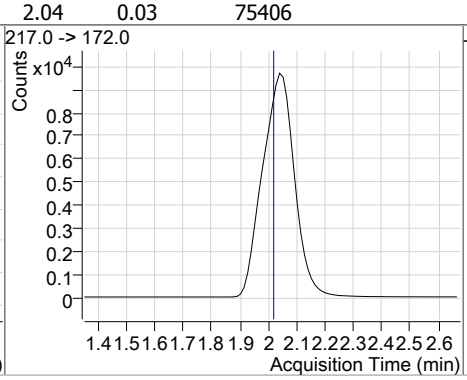
= Qualifier out of range, m = manually integrated, + = Area summed

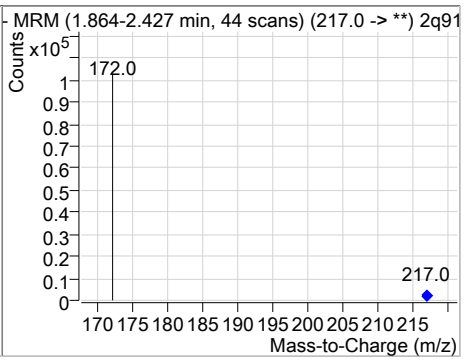
Perfluorinated Compounds by LC/MS/MS



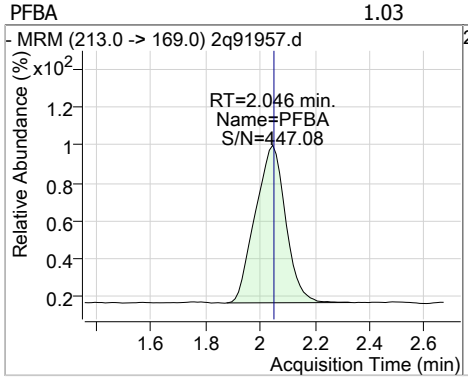
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.52	2.04	0.03	75406				

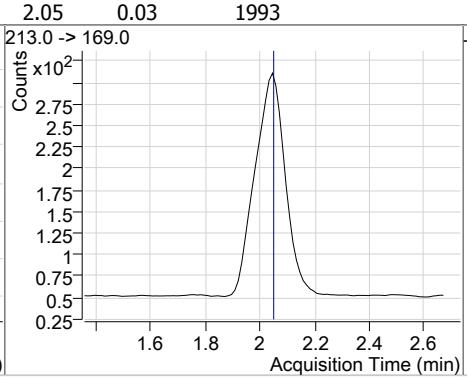


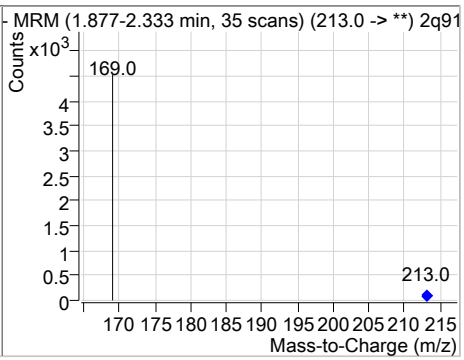




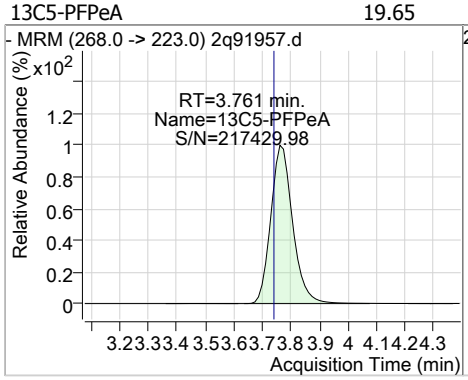
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.03	2.05	0.03	1993				

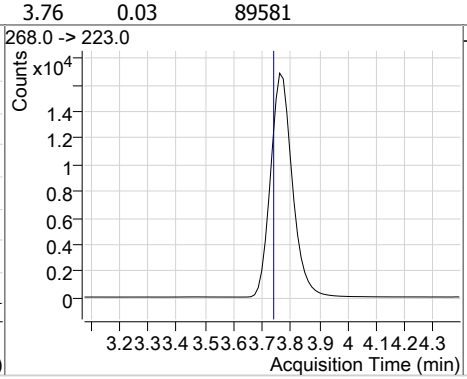


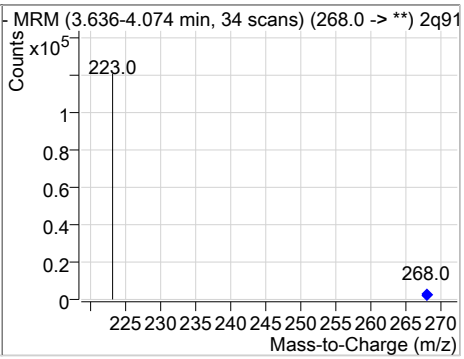




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.65	3.76	0.03	89581				

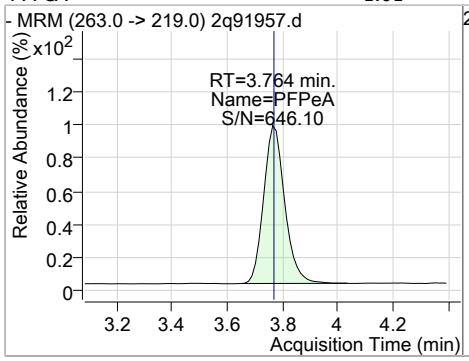


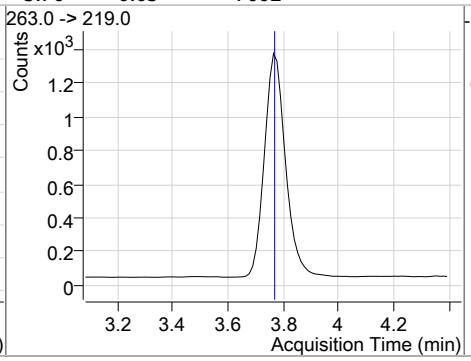


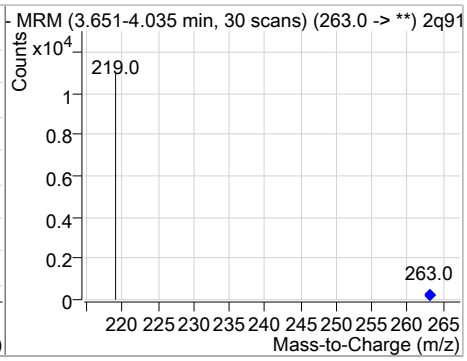


Perfluorinated Compounds by LC/MS/MS

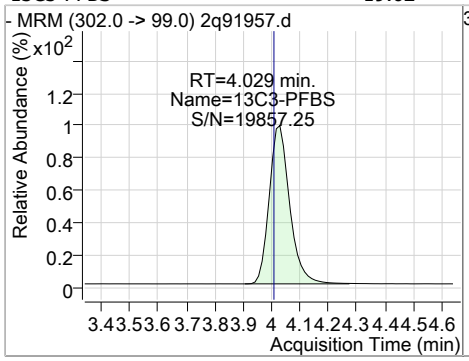
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.01	3.76	0.03	7002				

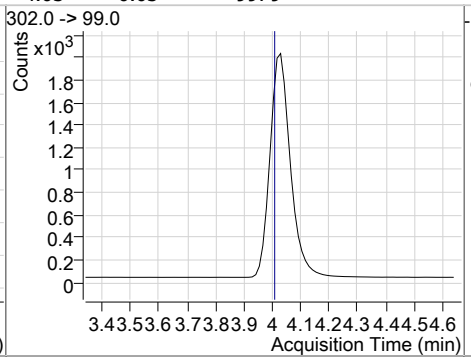


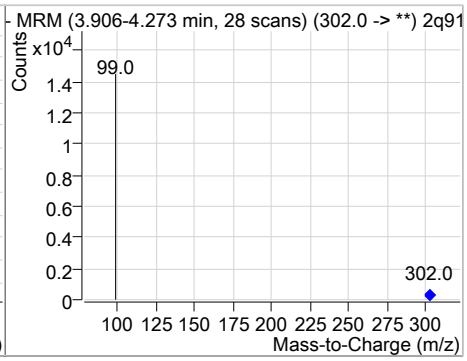




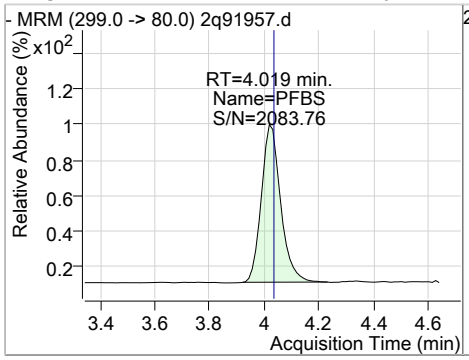
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.62	4.03	0.03	9979				

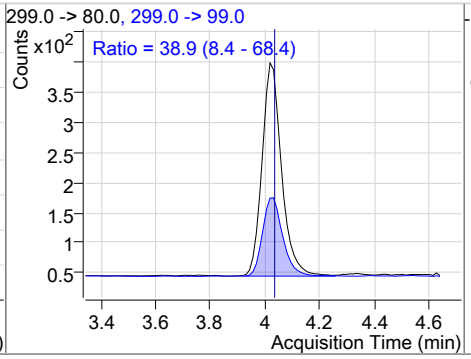


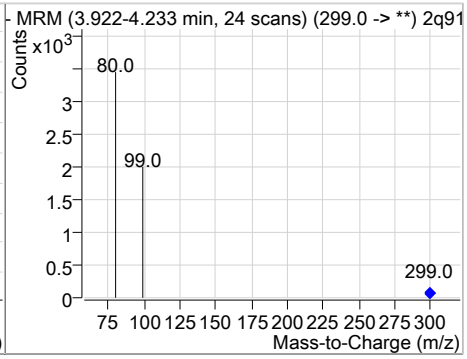




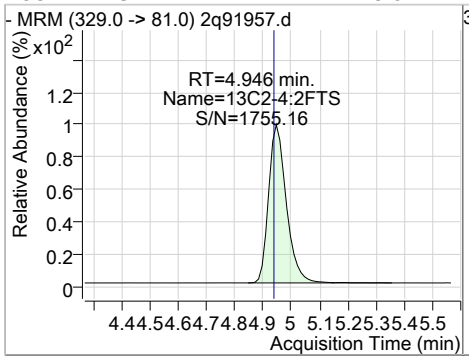
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.04	4.02	0.01	1727	299.0 -> 99.0	38.9	8.4	68.4

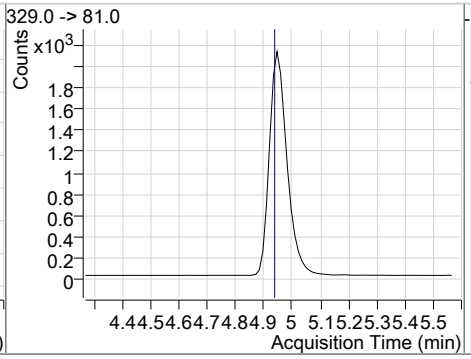


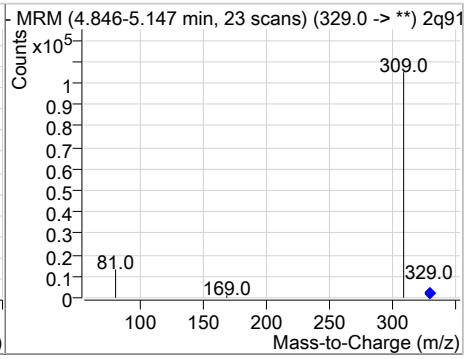




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.57	4.95	0.01	9104				

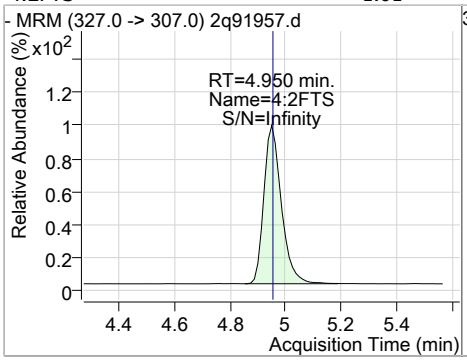


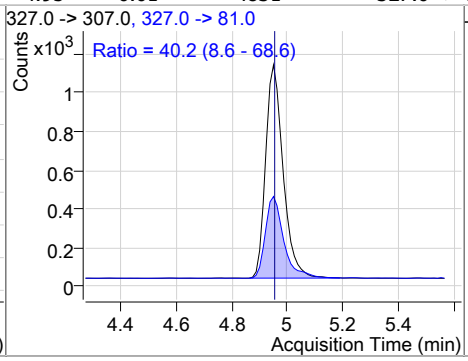


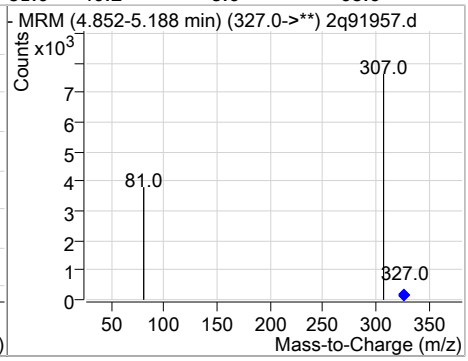


Perfluorinated Compounds by LC/MS/MS

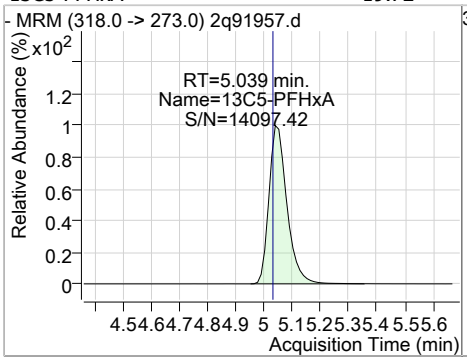
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.01	4.95	0.01	4831	327.0 -> 81.0	40.2	8.6	68.6

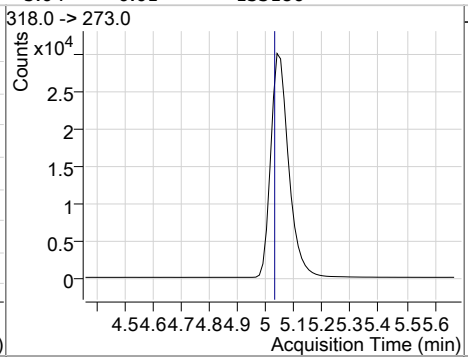


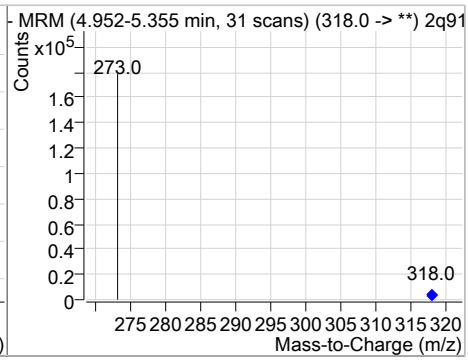




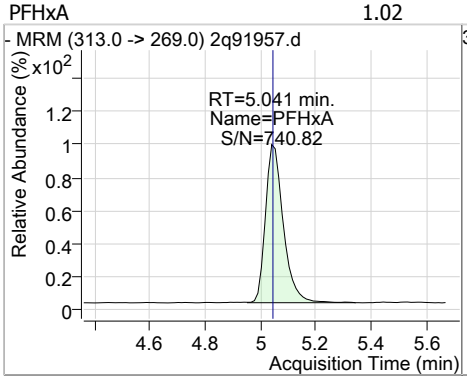
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.72	5.04	0.01	133186				

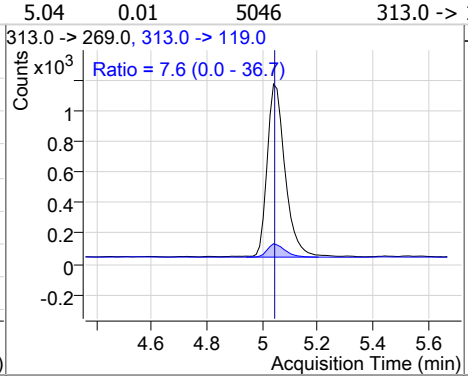


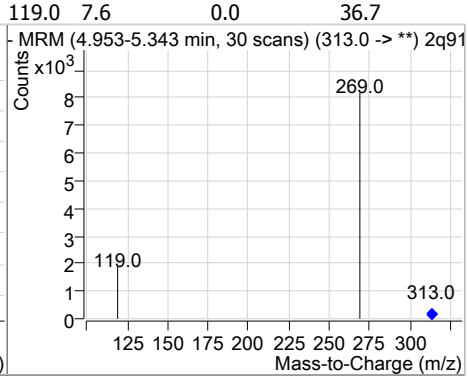




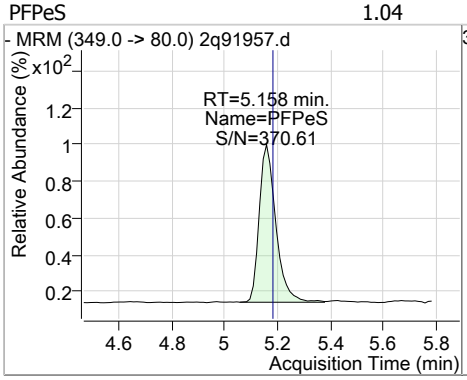
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.02	5.04	0.01	5046	313.0 -> 119.0	7.6	0.0	36.7

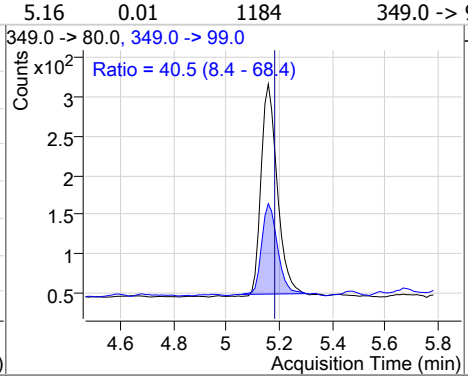


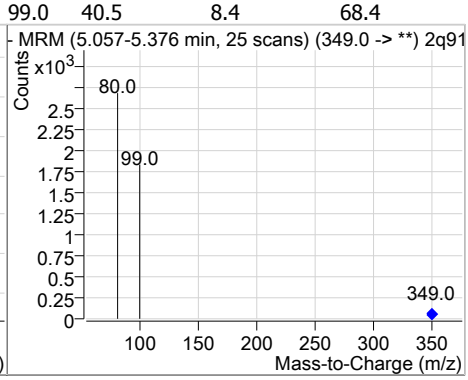




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.04	5.16	0.01	1184	349.0 -> 99.0	40.5	8.4	68.4

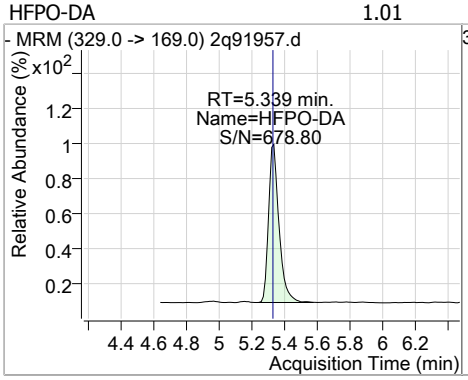


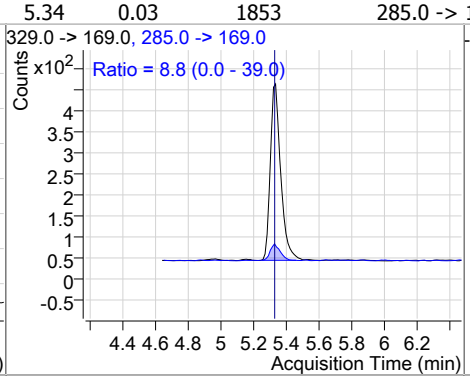


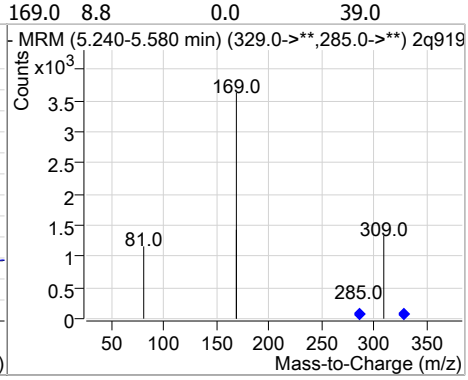


Perfluorinated Compounds by LC/MS/MS

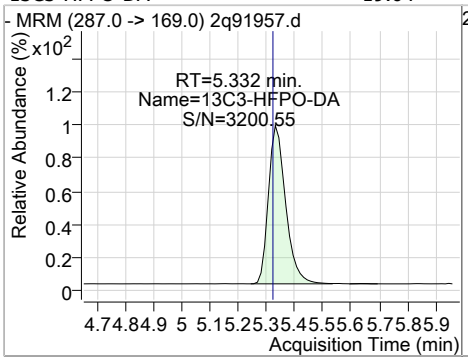
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.01	5.34	0.03	1853	285.0 -> 169.0	8.8	0.0	39.0

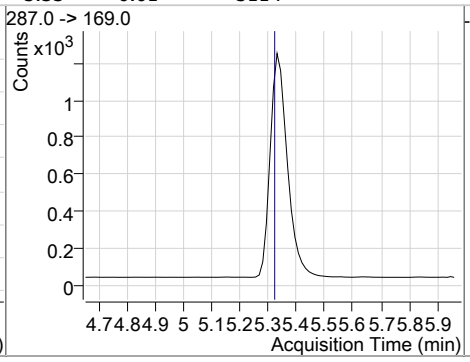


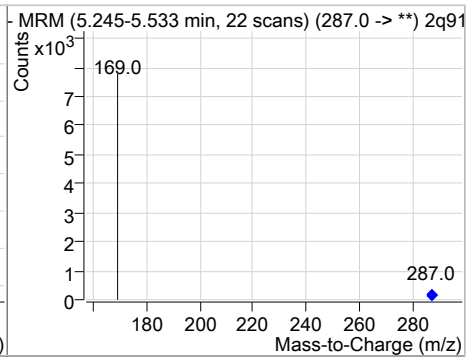




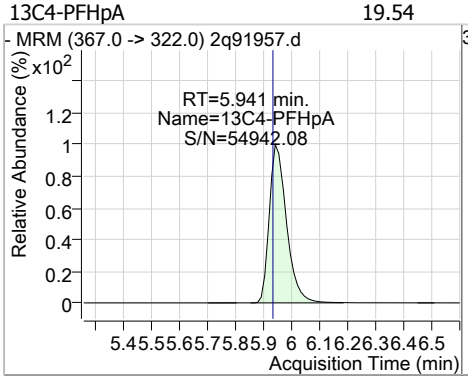
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.64	5.33	0.01	5114				

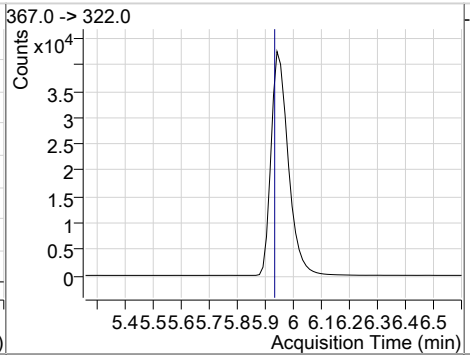


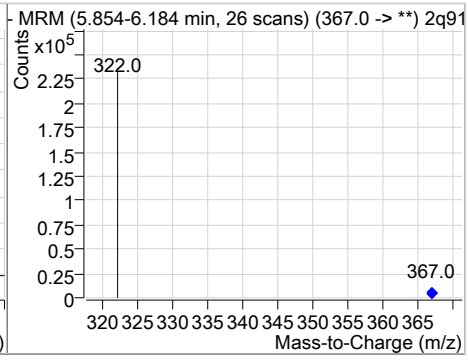




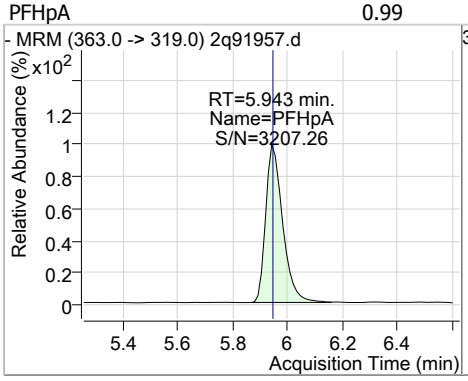
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.54	5.94	0.01	181421				

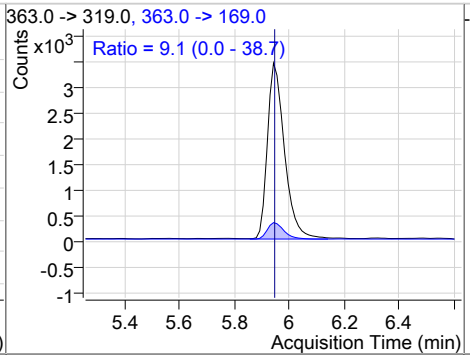


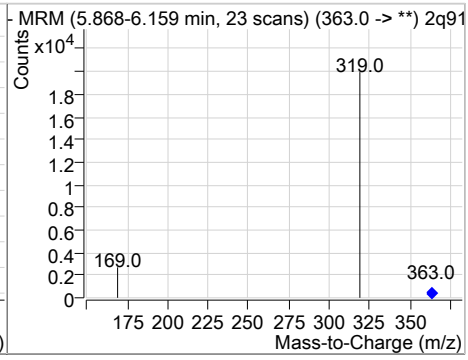




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.99	5.94	0.01	14628	363.0 -> 169.0	9.1	0.0	38.7

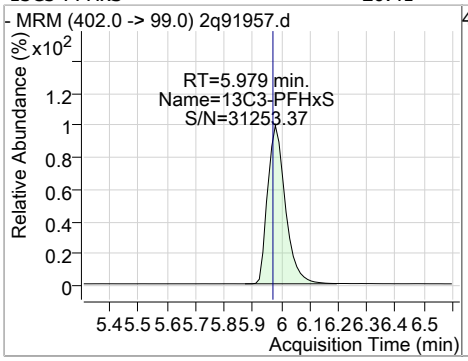


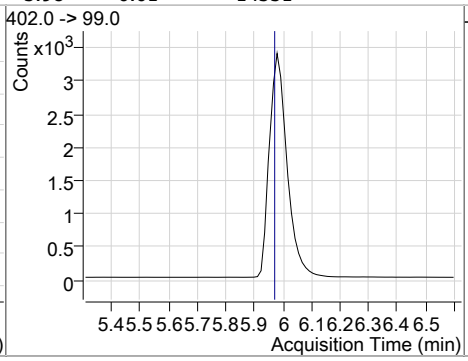


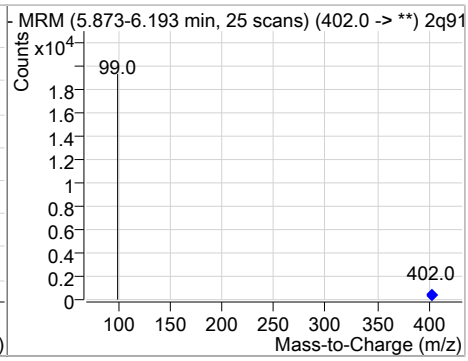


Perfluorinated Compounds by LC/MS/MS

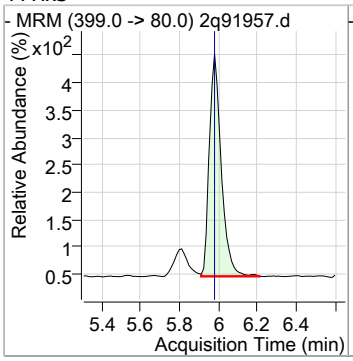
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.41	5.98	0.01	14551				

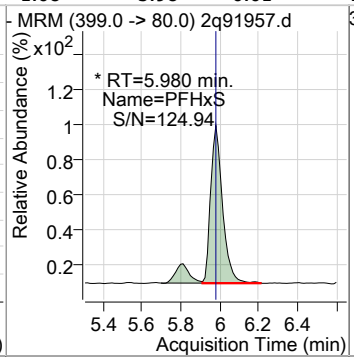


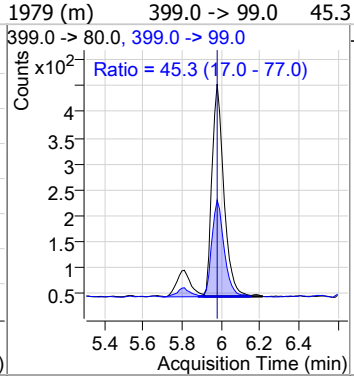


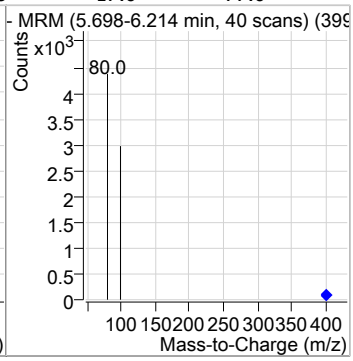


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.08	5.98	0.01	1979 (m)	399.0 -> 99.0	45.3	17.0	77.0

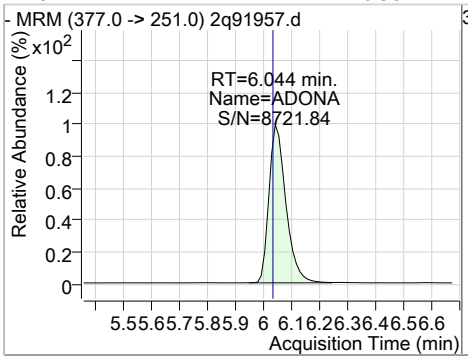


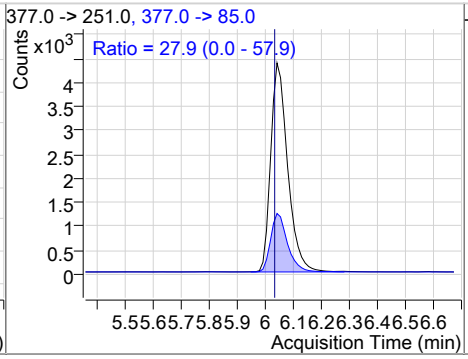


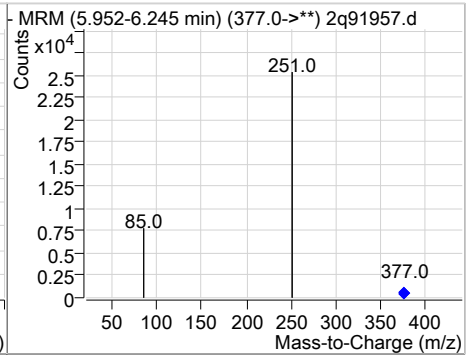




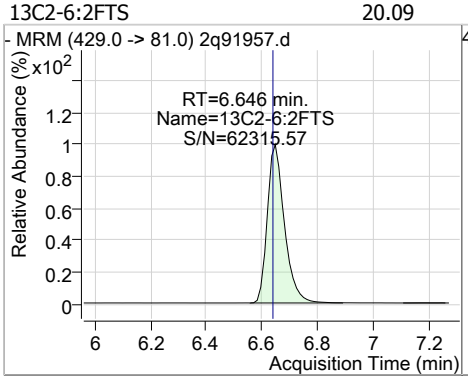
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.95	6.04	0.01	18301	377.0 -> 85.0	27.9	0.0	57.9

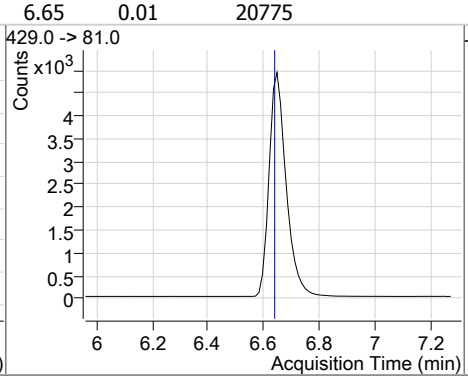


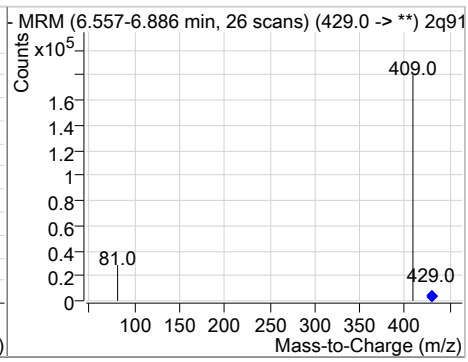




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.09	6.65	0.01	20775				

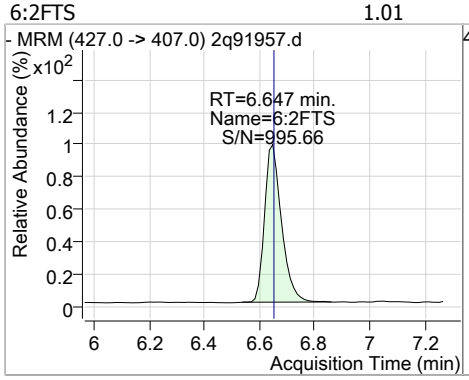


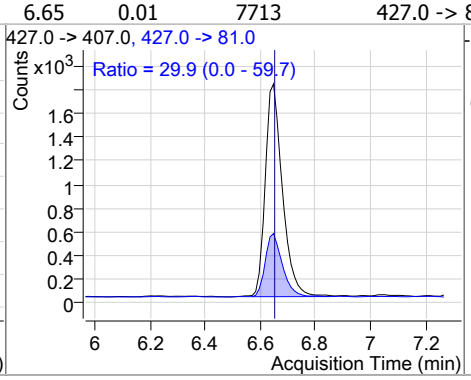


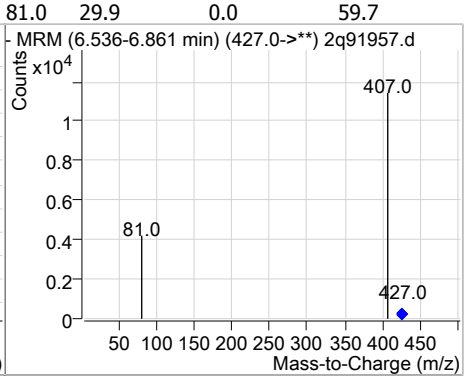


Perfluorinated Compounds by LC/MS/MS

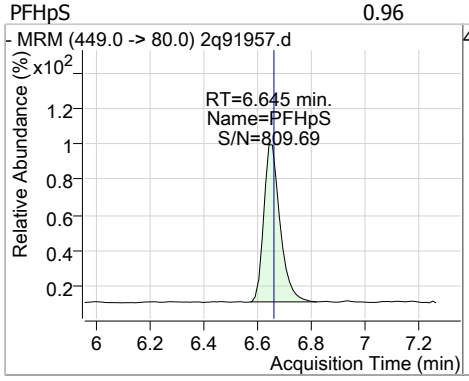
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.01	6.65	0.01	7713	427.0 -> 81.0	29.9	0.0	59.7

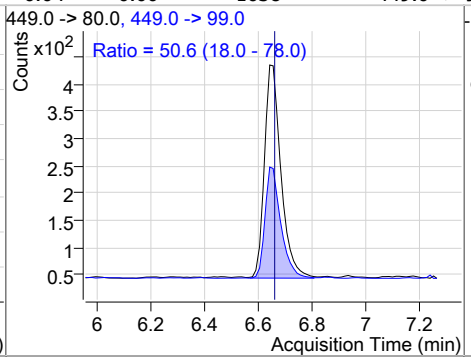


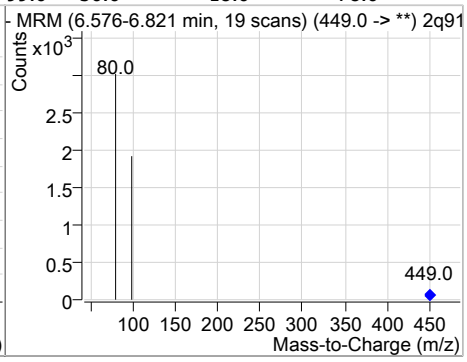




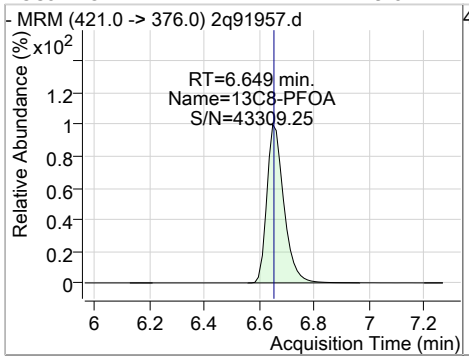
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.96	6.64	0.00	1638	449.0 -> 99.0	50.6	18.0	78.0

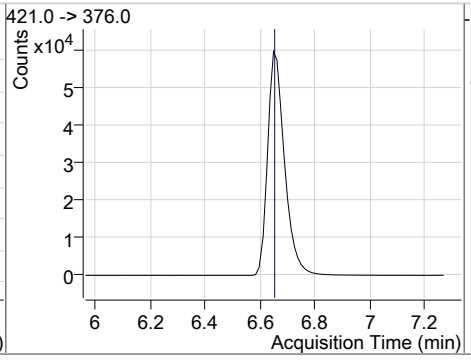


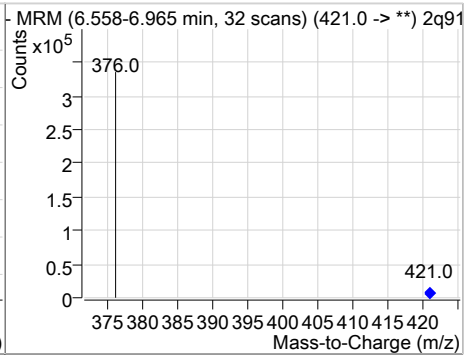




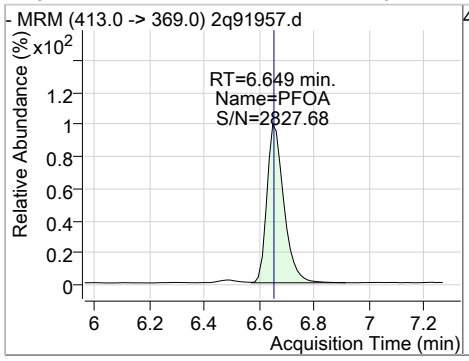
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.82	6.65	0.00	255163				

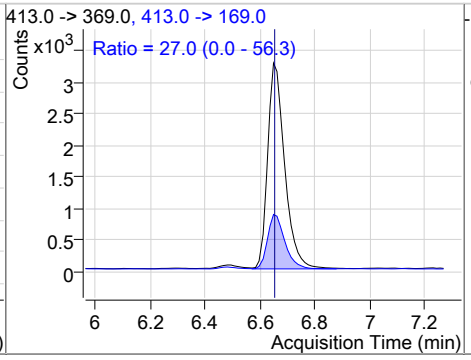


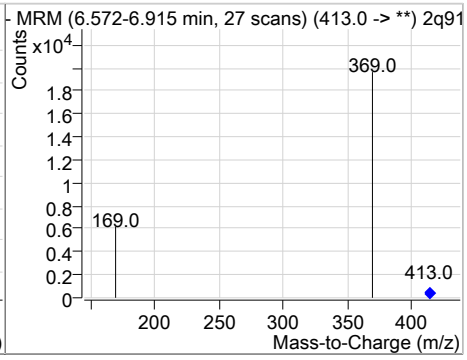




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.01	6.65	0.00	13943	413.0 -> 169.0	27.0	0.0	56.3

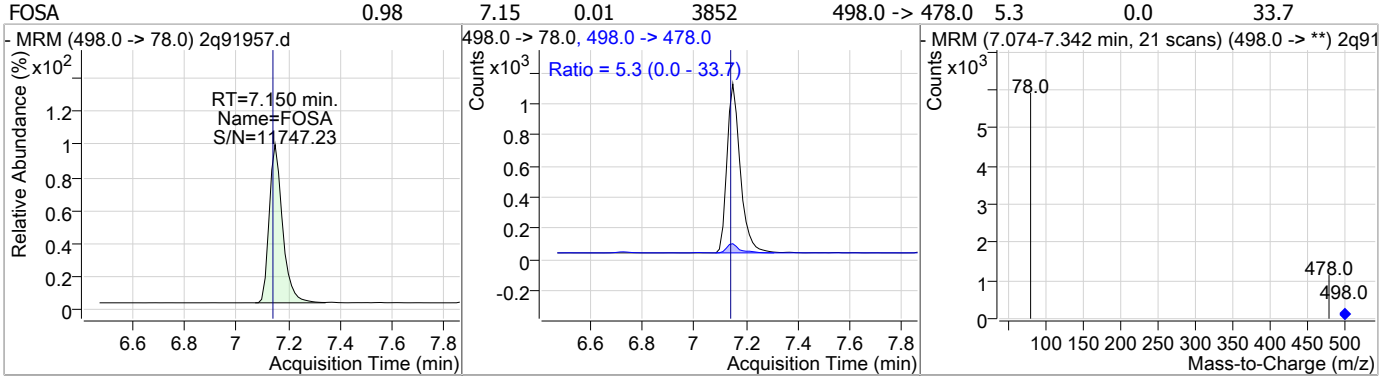




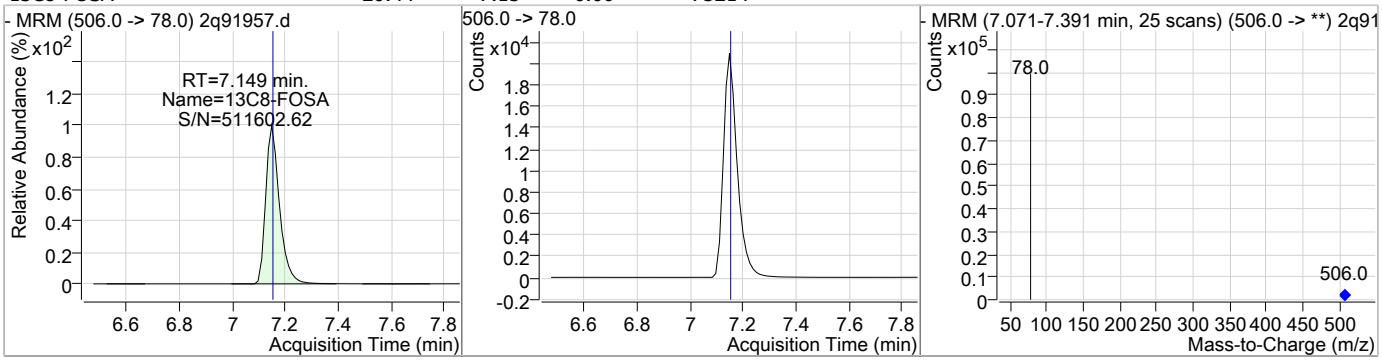


Perfluorinated Compounds by LC/MS/MS

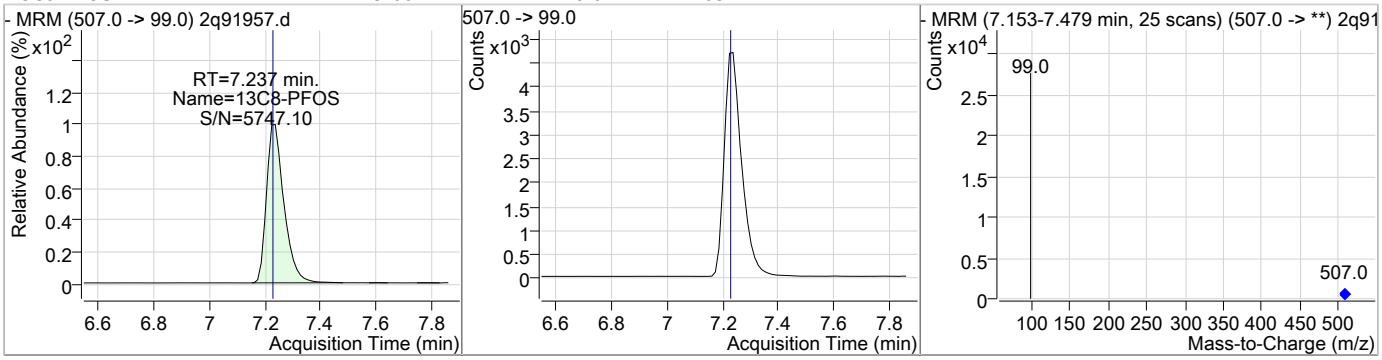
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.98	7.15	0.01	3852	498.0 -> 478.0	5.3	0.0	33.7



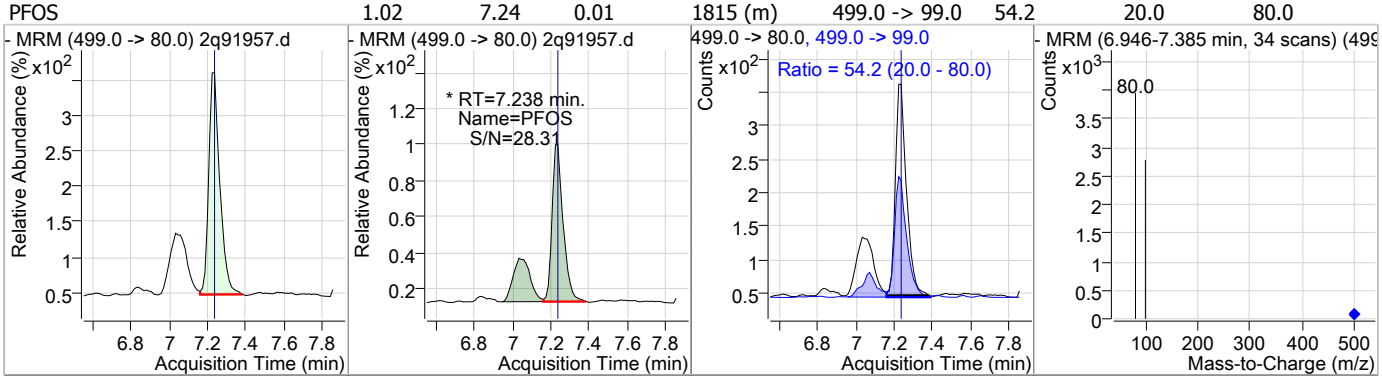
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.44	7.15	0.00	75214				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.60	7.24	0.01	20342				

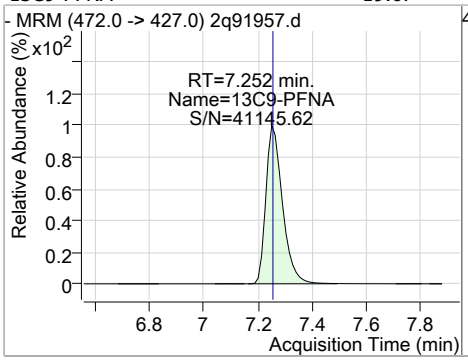


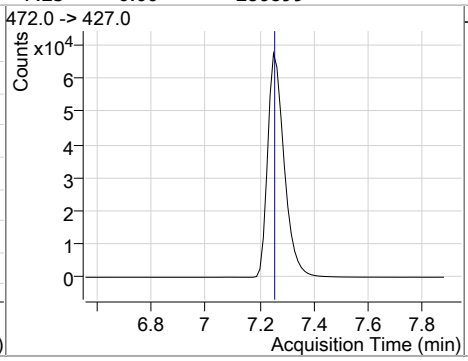
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.02	7.24	0.01	1815 (m)	499.0 -> 99.0	54.2	20.0	80.0

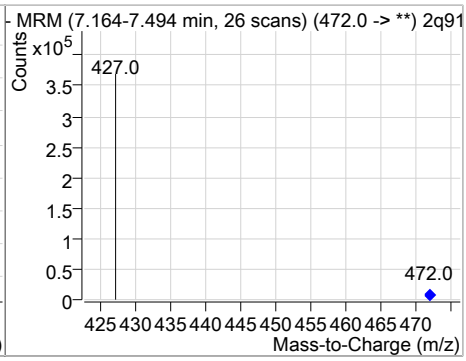


Perfluorinated Compounds by LC/MS/MS

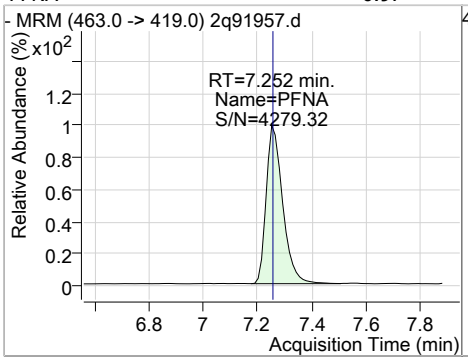
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.67	7.25	0.00	286899				

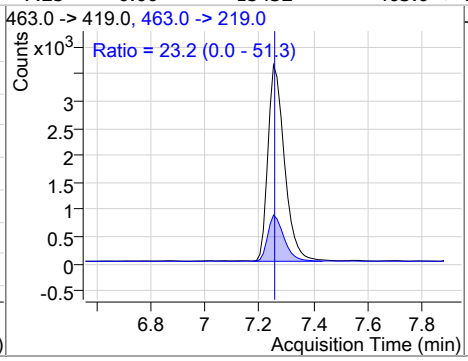


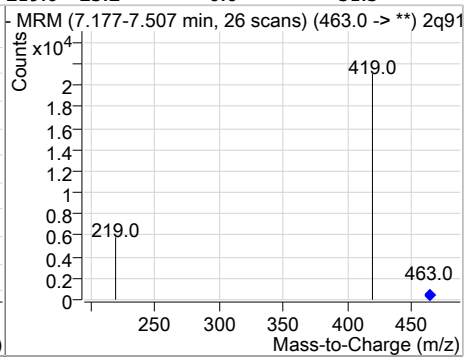




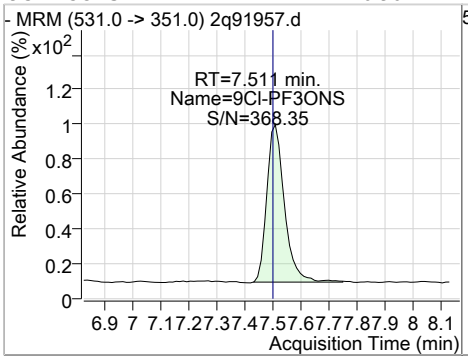
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.97	7.25	0.00	15432	463.0 -> 219.0	23.2	0.0	51.3

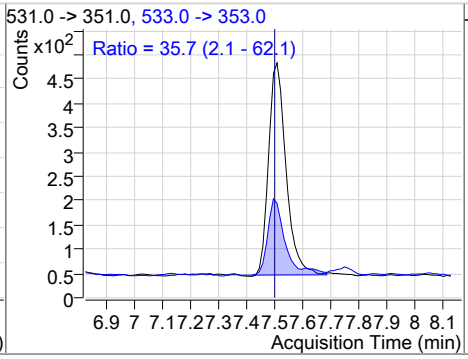


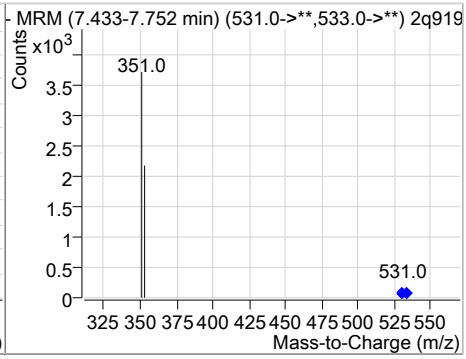




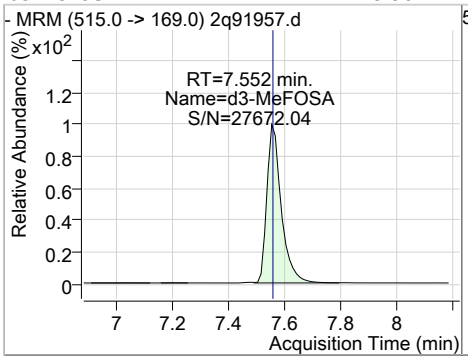
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.96	7.51	0.01	1911	533.0 -> 353.0	35.7	2.1	62.1

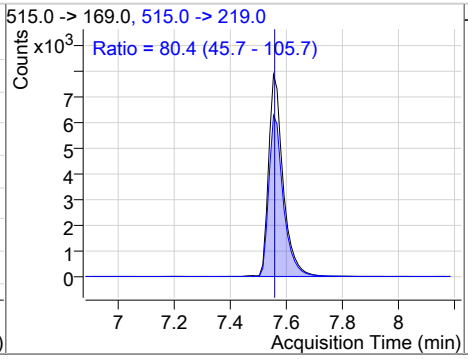


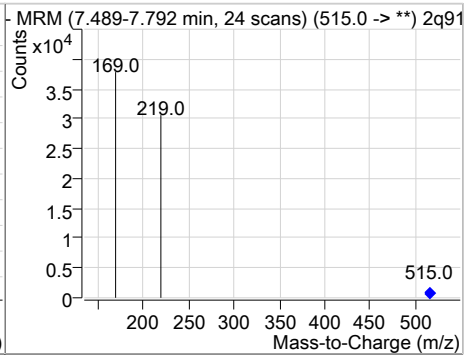




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	19.98	7.55	0.00	27968	515.0 -> 219.0	80.4	45.7	105.7

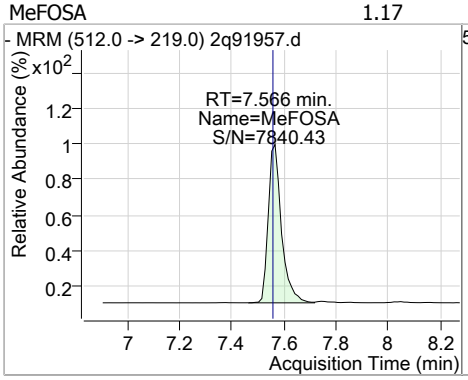


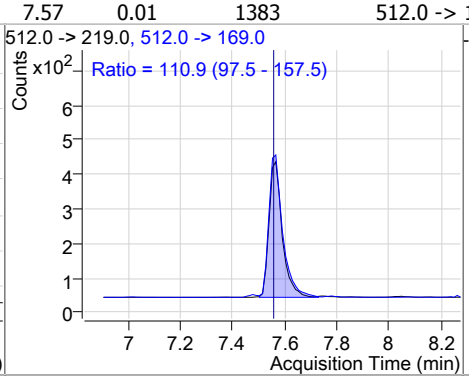


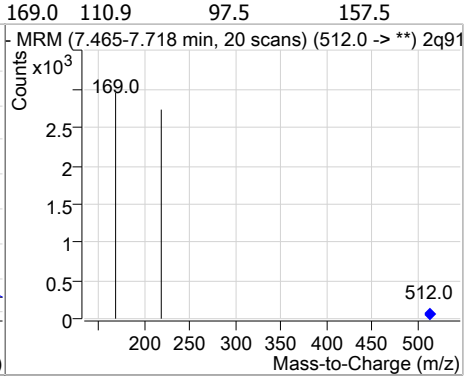


Perfluorinated Compounds by LC/MS/MS

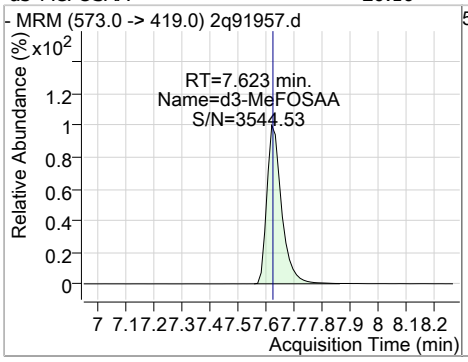
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.17	7.57	0.01	1383	512.0 -> 169.0	110.9	97.5	157.5

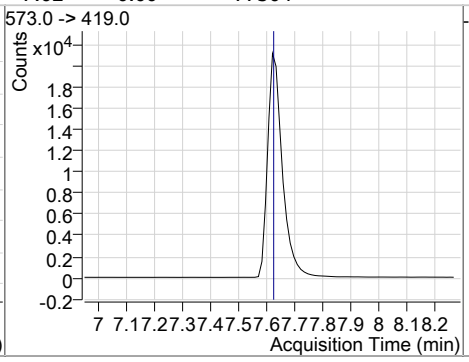


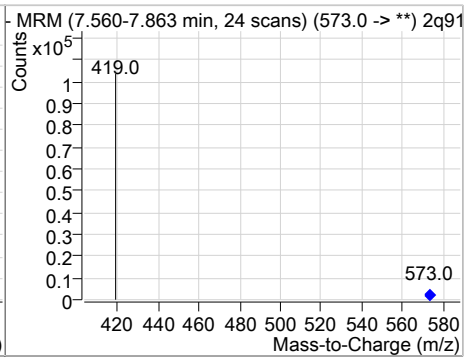




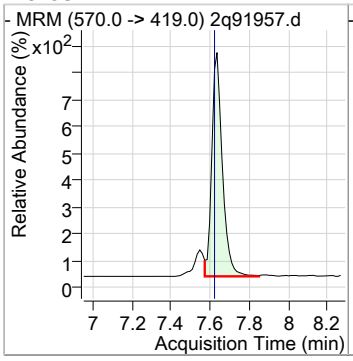
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.16	7.62	0.00	77304				

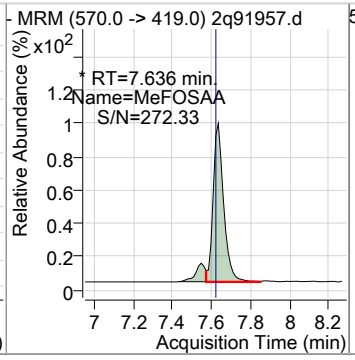


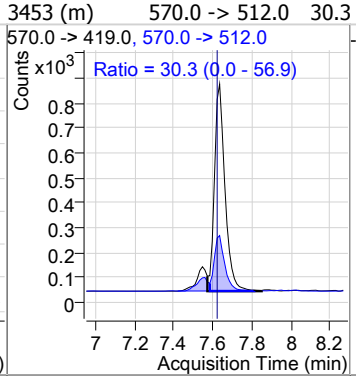


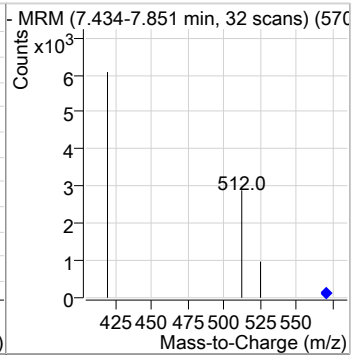


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.97	7.64	0.01	3453 (m)	570.0 -> 512.0	30.3	0.0	56.9

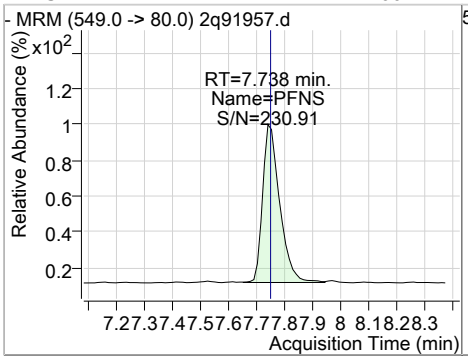


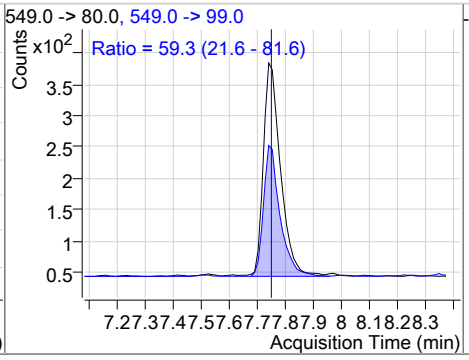


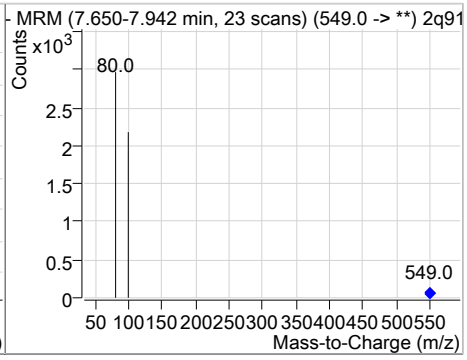




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.00	7.74	0.00	1438	549.0 -> 99.0	59.3	21.6	81.6

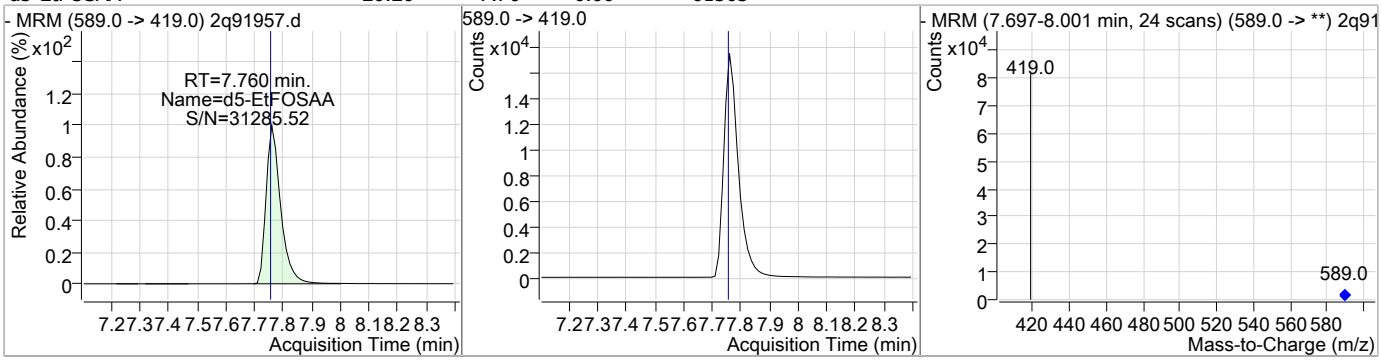




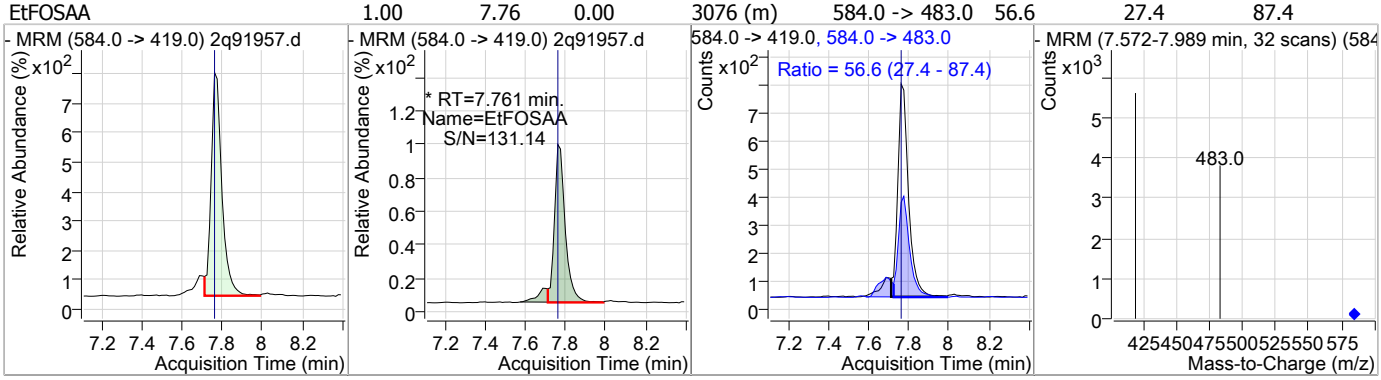


Perfluorinated Compounds by LC/MS/MS

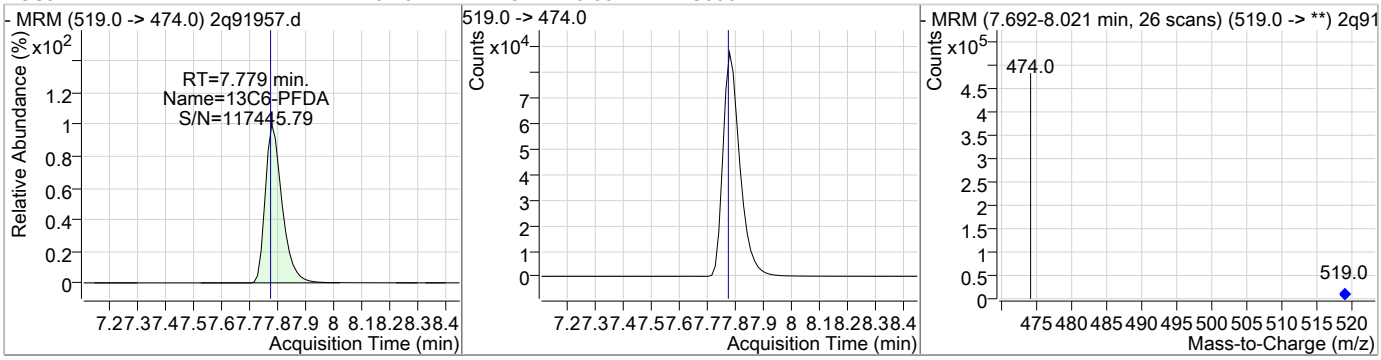
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	20.26	7.76	0.00	61503				



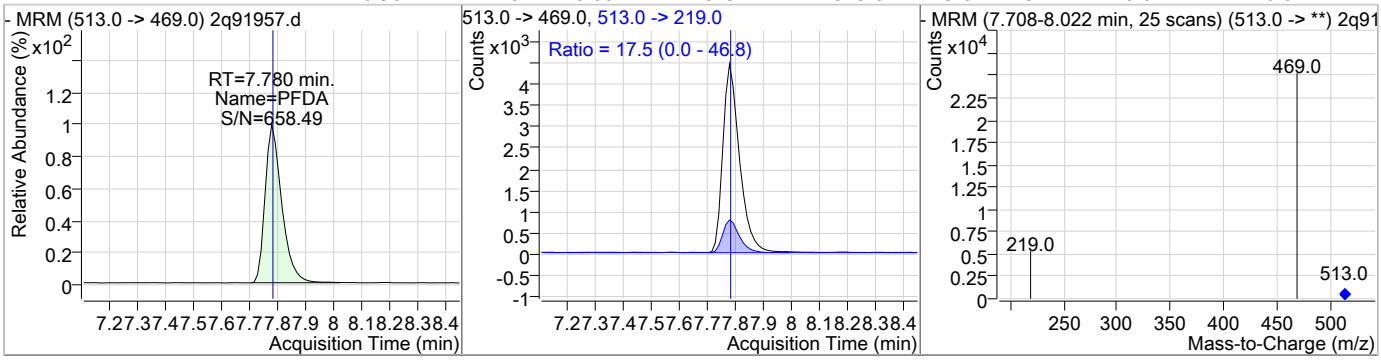
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.00	7.76	0.00	3076 (m)	584.0 -> 483.0	56.6	27.4	87.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.10	7.78	0.00	366027				

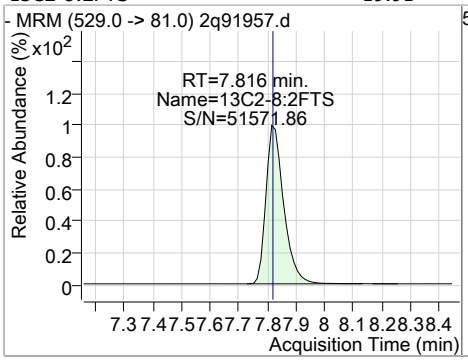


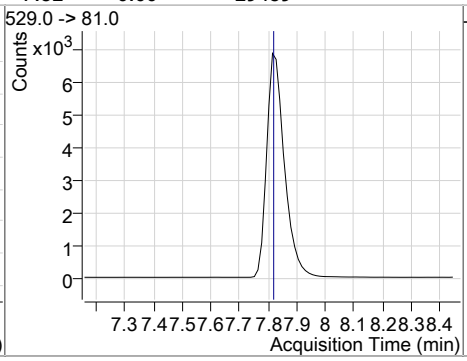
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.98	7.78	0.00	18194	513.0 -> 219.0	17.5	0.0	46.8

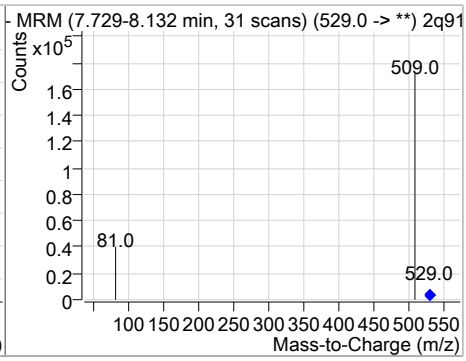


Perfluorinated Compounds by LC/MS/MS

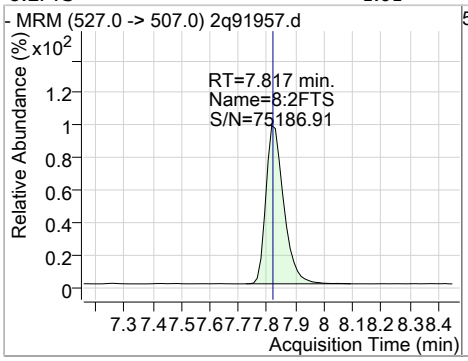
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.91	7.82	0.00	29489				

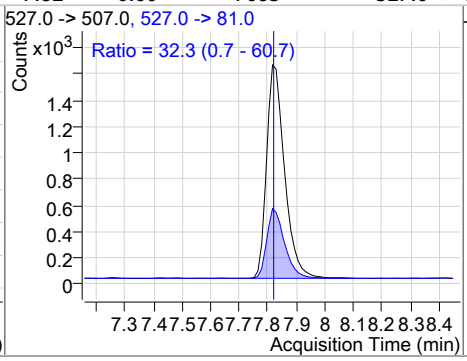


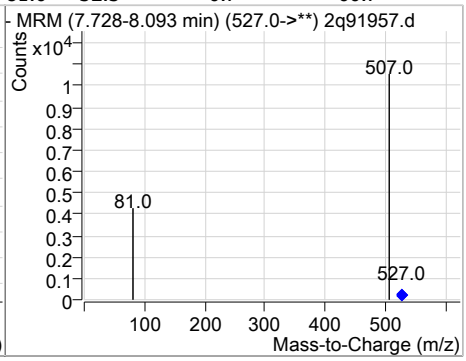




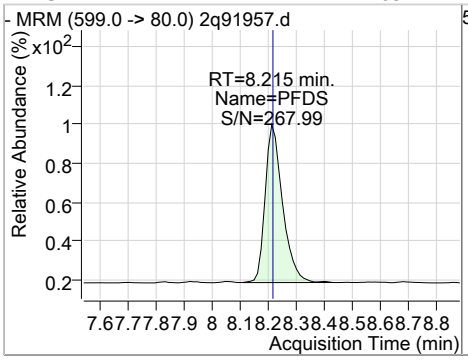
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.01	7.82	0.00	7085	527.0 -> 81.0	32.3	0.7	60.7

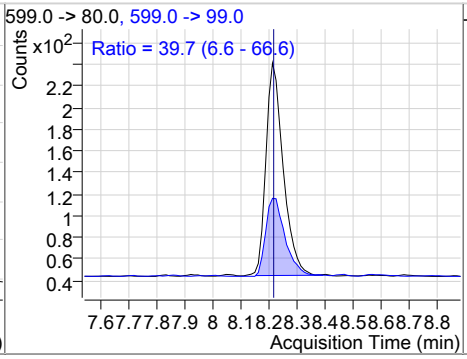


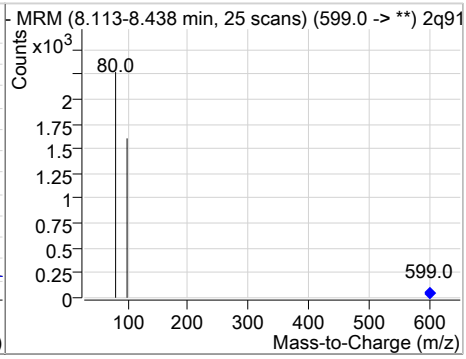




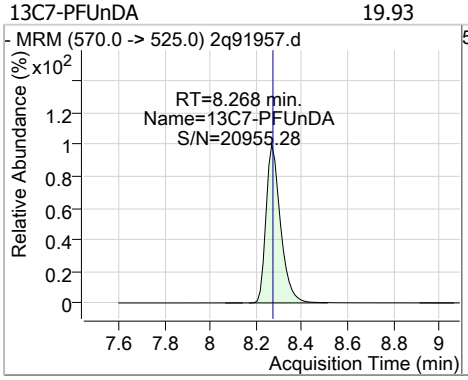
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.03	8.22	0.00	851	599.0 -> 99.0	39.7	6.6	66.6

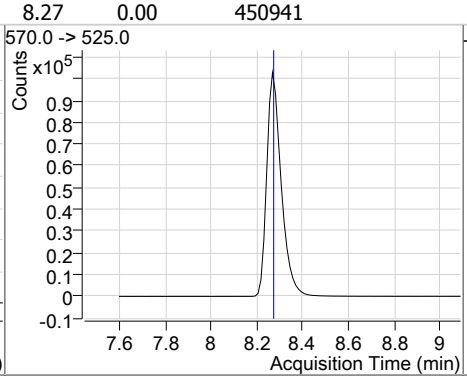


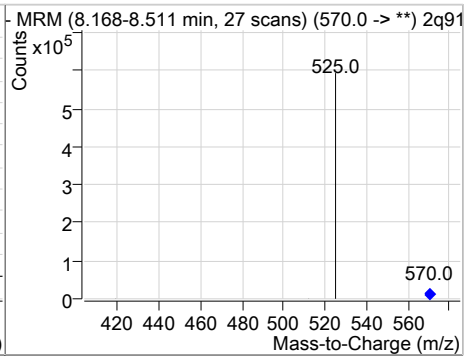




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.93	8.27	0.00	450941				

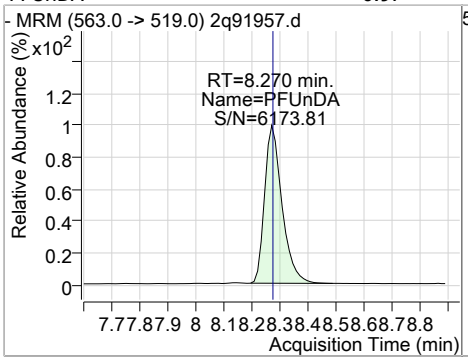


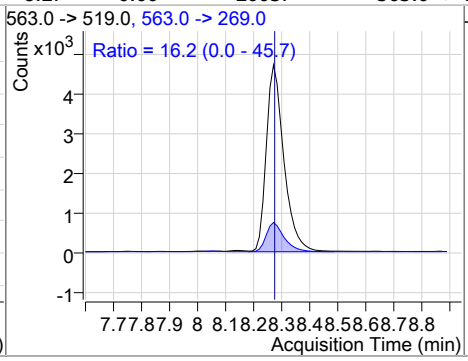


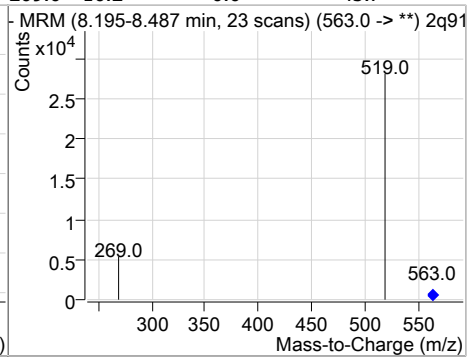


Perfluorinated Compounds by LC/MS/MS

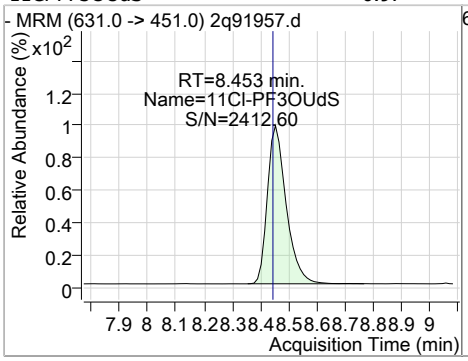
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.97	8.27	0.00	20037	563.0 -> 269.0	16.2	0.0	45.7

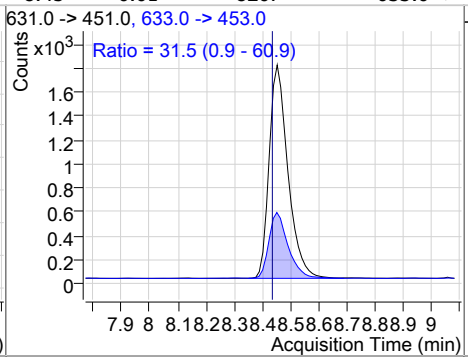


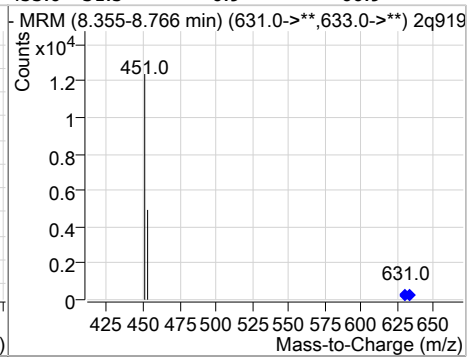




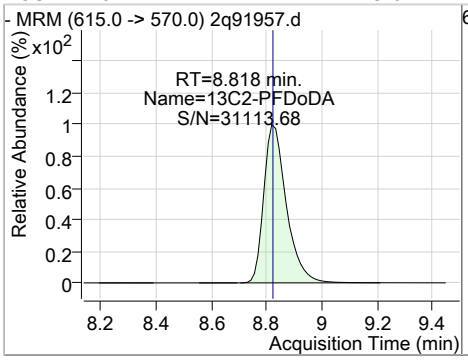
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.97	8.45	0.01	8267	633.0 -> 453.0	31.5	0.9	60.9

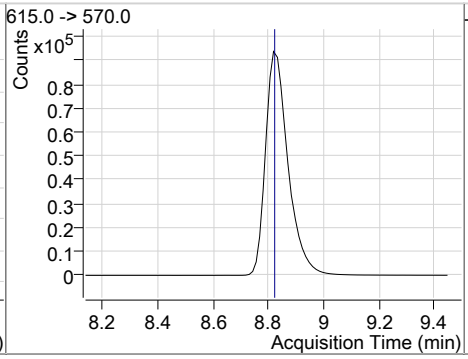


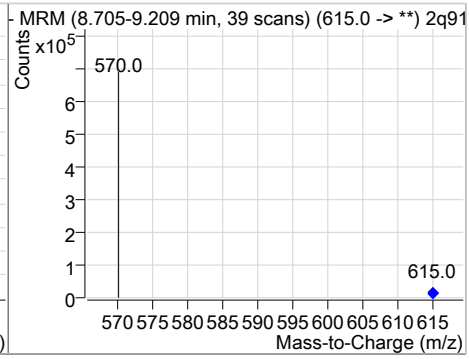




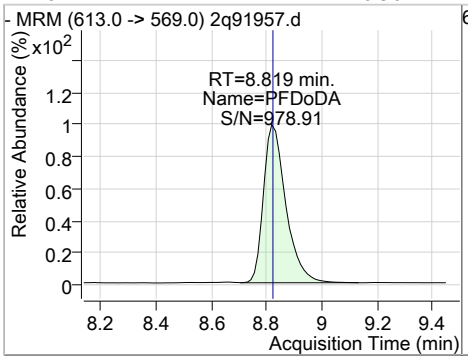
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.62	8.82	0.00	530105				

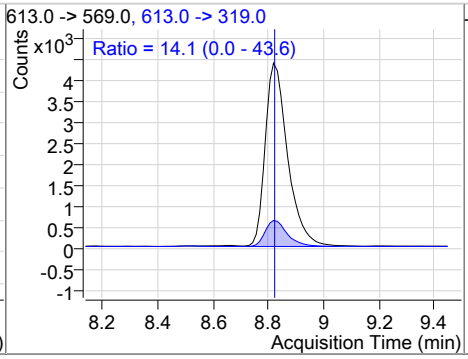


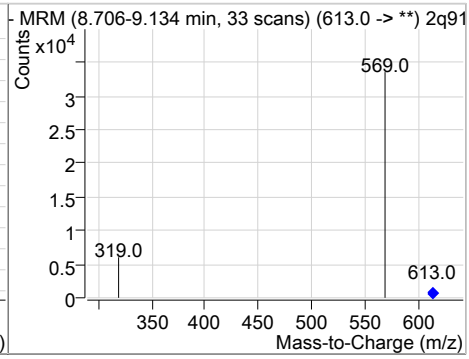




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.96	8.82	0.00	24523	613.0 -> 319.0	14.1	0.0	43.6

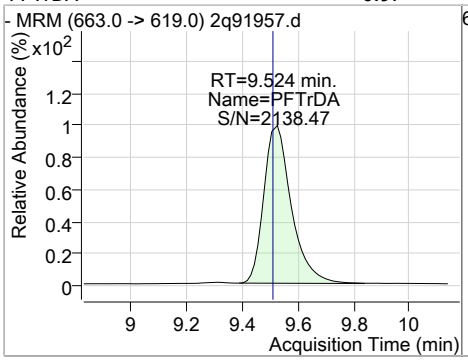


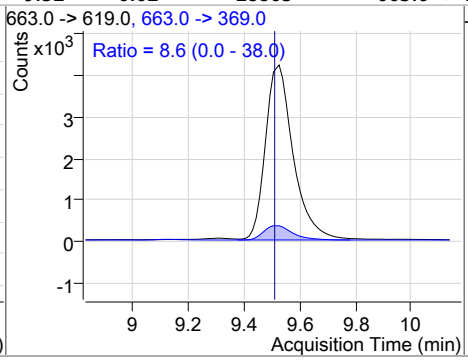


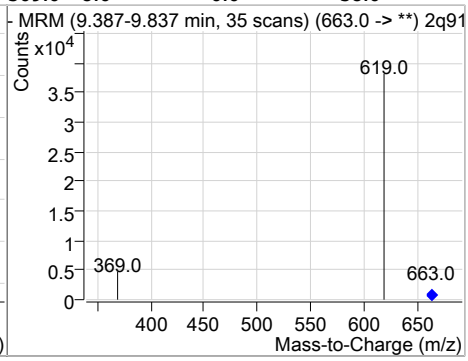


Perfluorinated Compounds by LC/MS/MS

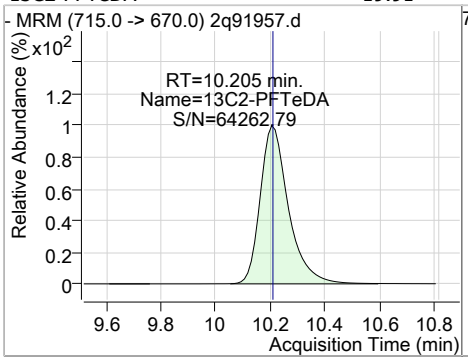
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.97	9.52	0.02	28805	663.0 -> 369.0	8.6	0.0	38.0

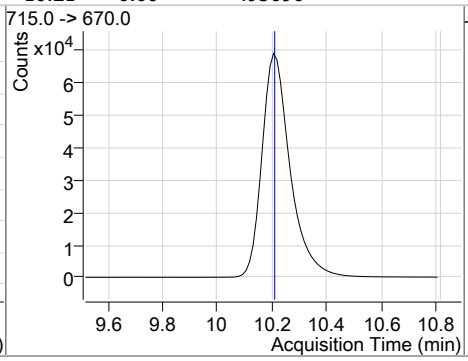


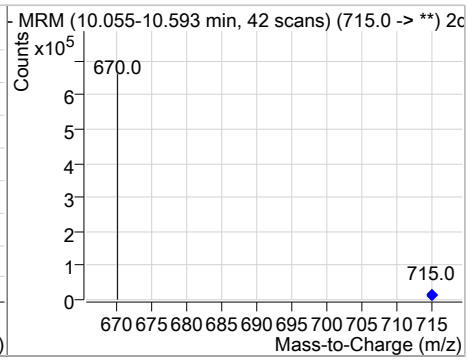




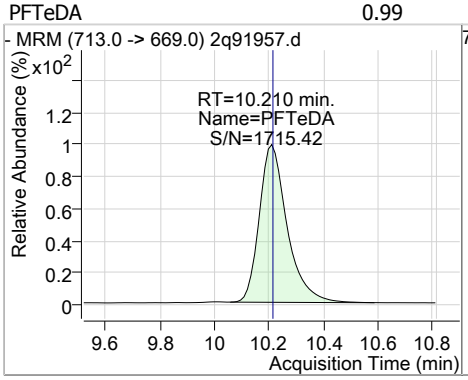
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.91	10.21	0.00	495690				

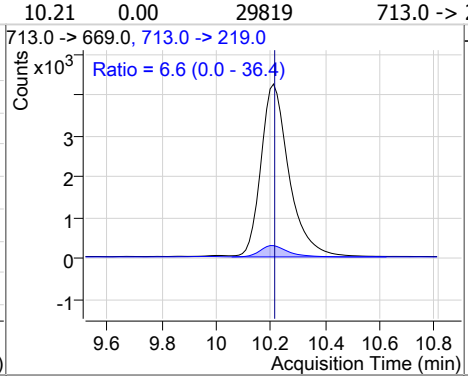


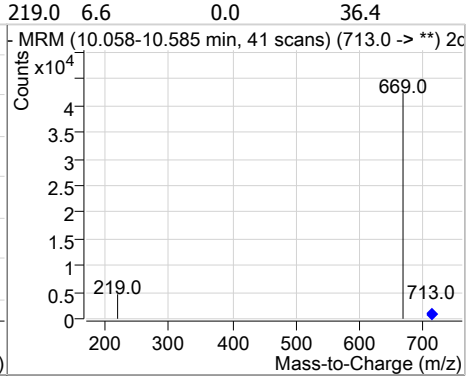




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.99	10.21	0.00	29819	713.0 -> 219.0	6.6	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91957.D
Injection Time: 05/27/22 12:18
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.64	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91958.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 12:42:14 PM
Sample Name : ic1287-2
Vial : P1-A4
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

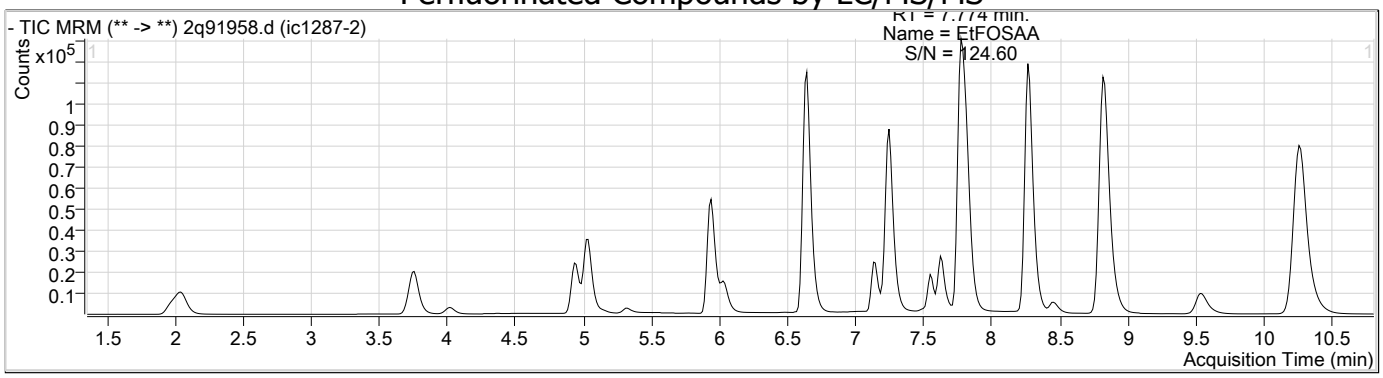
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	65319	20.00	µg/L	0.000
M4-PFBA	2.039	217.0 -> 172.0	79572	20.00	µg/L	0.025
M5-PFPeA	3.761	268.0 -> 223.0	94311	20.00	µg/L	0.025
M5-PFHxA	5.039	318.0 -> 273.0	139780	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	191603	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	267550	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	304760	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	388159	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	471618	20.00	µg/L	0.000
M2-PFDoDA	8.818	615.0 -> 570.0	567261	20.00	µg/L	0.000
M2-PFTeDA	10.255	715.0 -> 670.0	524095	20.00	µg/L	0.050
M8-FOSA	7.136	506.0 -> 78.0	78966	20.00	µg/L	-0.013
M3-PFBS	4.017	302.0 -> 99.0	10532	20.00	µg/L	0.013
M3-PFHxS	5.967	402.0 -> 99.0	15045	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	21345	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	9662	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	21826	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	30598	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	80426	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	5376	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	30058	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	9662	20.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
13C2-6:2FTS	6.634	429.0 -> 81.0	21826	21.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%		
13C2-8:2FTS	7.816	529.0 -> 81.0	30598	20.66	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C2-PFDoDA	8.818	615.0 -> 570.0	567261	21.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.0%		
13C2-PFTeDA	10.255	715.0 -> 670.0	524095	21.05	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.3%		
13C3-PFBS	4.017	302.0 -> 99.0	10532	20.71	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C3-PFHxS	5.967	402.0 -> 99.0	15045	21.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%		
13C4-PFBA	2.039	217.0 -> 172.0	79572	20.60	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C4-PFHpA	5.941	367.0 -> 322.0	191603	20.64	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
d5-EtFOSAA	7.760	589.0 -> 419.0	65319	21.52	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.6%		
13C5-PFHxA	5.039	318.0 -> 273.0	139780	20.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C5-PFPeA	3.761	268.0 -> 223.0	94311	20.69	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

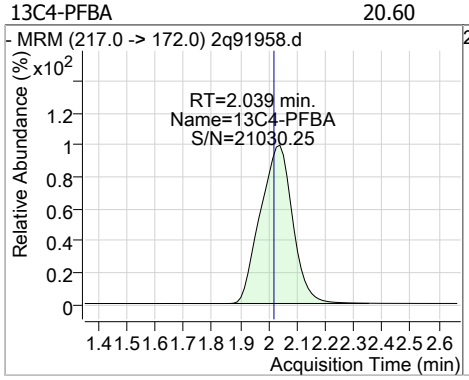
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C6-PFDA	7.779	519.0 -> 474.0	388159	21.31 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.6%		
13C7-PFUnDA	8.269	570.0 -> 525.0	471618	20.84 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%		
13C8-FOSA	7.136	506.0 -> 78.0	78966	21.46 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.3%		
13C8-PFOA	6.649	421.0 -> 376.0	267550	20.78 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C8-PFOS	7.225	507.0 -> 99.0	21345	20.57 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
13C9-PFNA	7.252	472.0 -> 427.0	304760	20.89 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%		
d3-MeFOSAA	7.623	573.0 -> 419.0	80426	20.97 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C3-HFPO-DA	5.319	287.0 -> 169.0	5376	20.64 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
d3-MeFOSA	7.552	515.0 -> 169.0	30058	21.48 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.4%		
Target Compounds						**QValue**
4:2FTS	4.937	327.0 -> 307.0	10109	2.00 µg/L		98
6:2FTS	6.635	427.0 -> 407.0	16013	1.99 µg/L		100
8:2FTS	7.817	527.0 -> 507.0	14766	2.03 µg/L		97
EtFOSAA	7.774	584.0 -> 419.0	6646	2.04 µg/L	m	93
FOSA	7.137	498.0 -> 78.0	8203	1.98 µg/L		100
MeFOSAA	7.636	570.0 -> 419.0	7413	2.01 µg/L	m	95
PFBA	2.033	213.0 -> 169.0	4121	2.02 µg/L		100
PFBS	4.019	299.0 -> 80.0	3567	2.03 µg/L		99
PFDA	7.780	513.0 -> 469.0	38116	1.94 µg/L		99
PFDoDA	8.819	613.0 -> 569.0	53440	1.96 µg/L		99
PFDS	8.215	599.0 -> 80.0	1766	2.05 µg/L		98
PFHpA	5.943	363.0 -> 319.0	31300	2.00 µg/L		99
PFHpS	6.645	449.0 -> 80.0	3470	1.96 µg/L		90
PFHxA	5.041	313.0 -> 269.0	10294	1.99 µg/L		99
PFHxS	5.967	399.0 -> 80.0	3896	2.06 µg/L	m	99
PFNA	7.252	463.0 -> 419.0	33720	1.99 µg/L		100
PFNS	7.738	549.0 -> 80.0	3093	2.06 µg/L		98
PFOA	6.649	413.0 -> 369.0	28786	1.98 µg/L		99
PFOS	7.225	499.0 -> 80.0	3730	2.00 µg/L	m	99
PFPeA	3.764	263.0 -> 219.0	14678	2.02 µg/L		100
PFPeS	5.145	349.0 -> 80.0	2503	2.08 µg/L		99
PFTeDA	10.260	713.0 -> 669.0	63140	1.98 µg/L		99
PFTrDA	9.537	663.0 -> 619.0	63008	1.98 µg/L		99
PFUnDA	8.270	563.0 -> 519.0	42503	1.97 µg/L		99
11Cl-PF3OUdS	8.453	631.0 -> 451.0	17379	1.90 µg/L		99
9Cl-PF3ONS	7.499	531.0 -> 351.0	4048	1.92 µg/L		97
ADONA	6.044	377.0 -> 251.0	38988	1.94 µg/L		99
HFPO-DA	5.326	329.0 -> 169.0	3813	1.97 µg/L		97
MeFOSA	7.554	512.0 -> 219.0	2442	1.93 µg/L		98

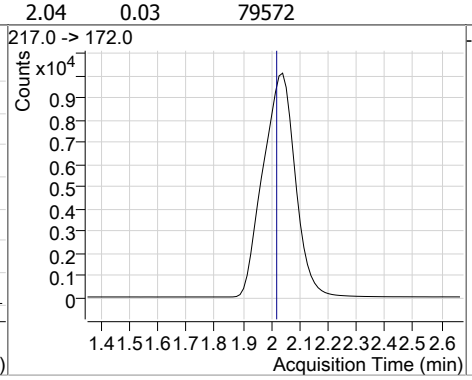
= Qualifier out of range, m = manually integrated, + = Area summed

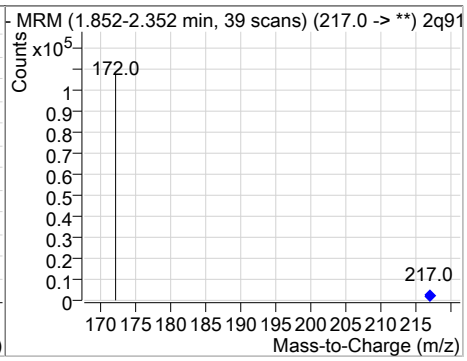
Perfluorinated Compounds by LC/MS/MS



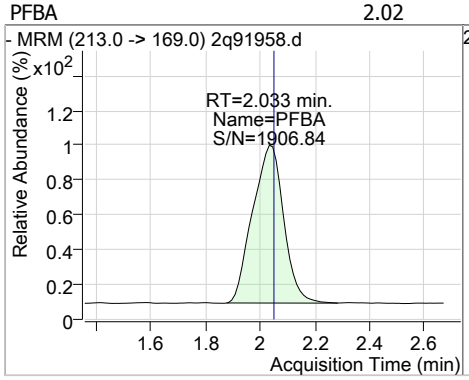
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.60	2.04	0.03	79572				

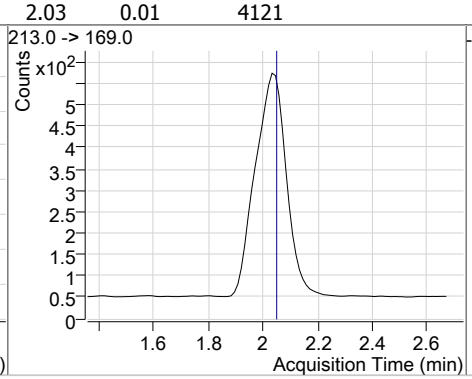


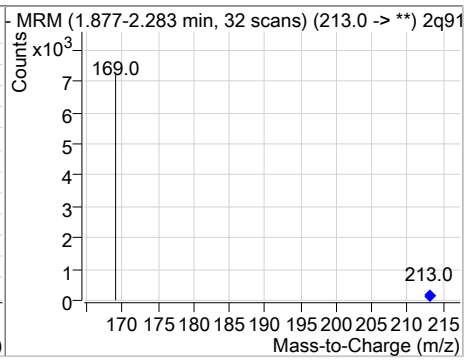




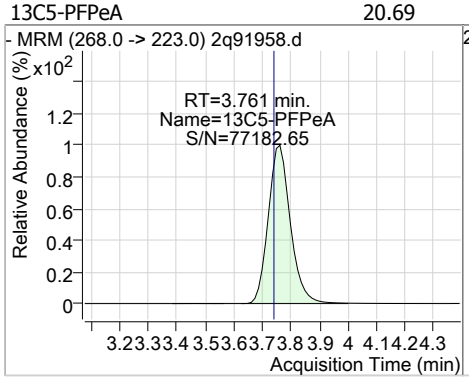
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	2.02	2.03	0.01	4121				

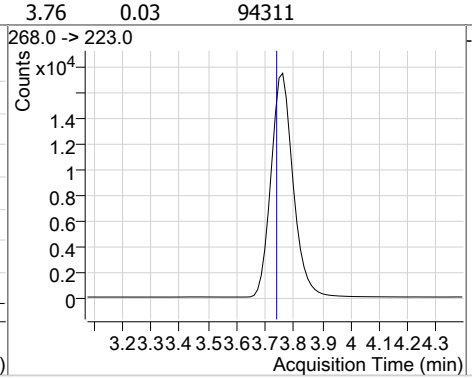


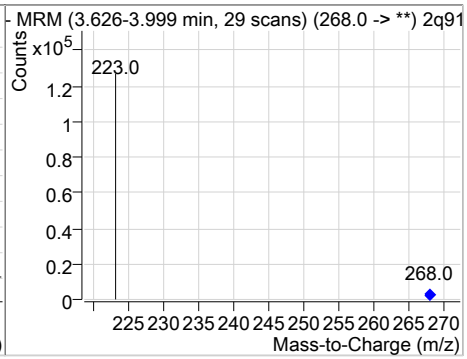




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.69	3.76	0.03	94311				

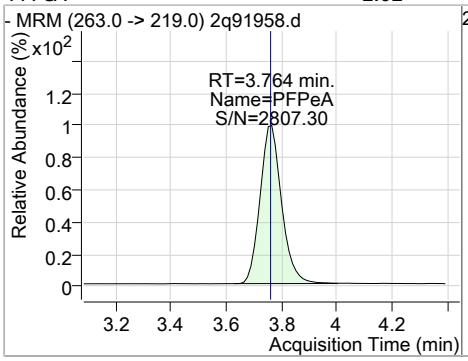


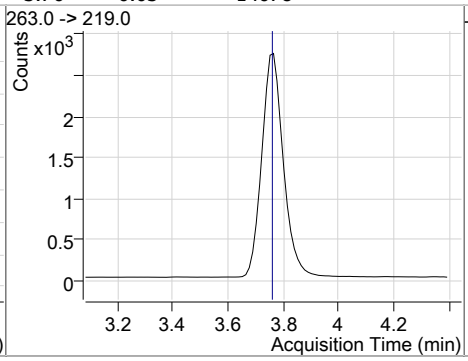


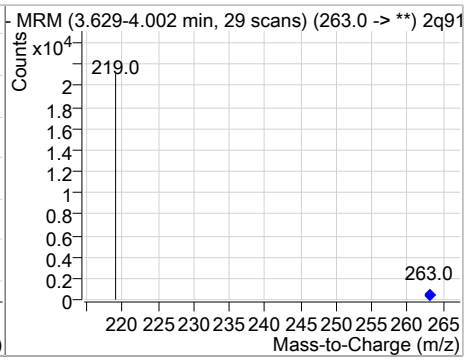


Perfluorinated Compounds by LC/MS/MS

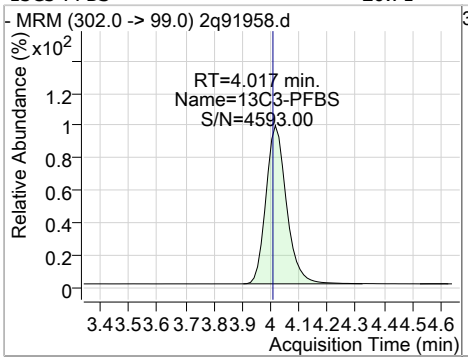
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.02	3.76	0.03	14678				

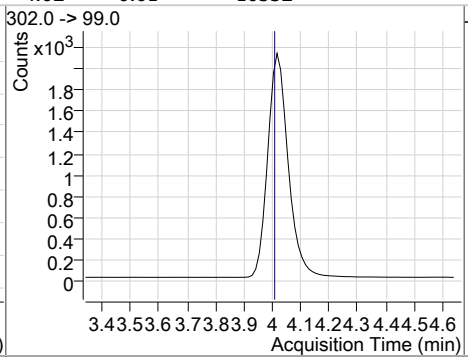


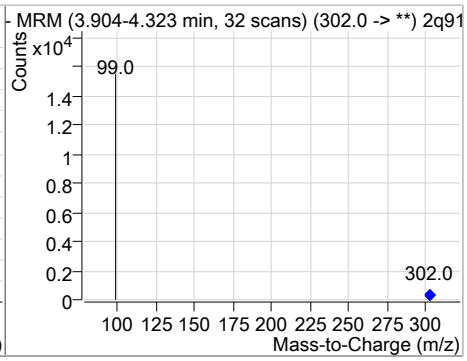




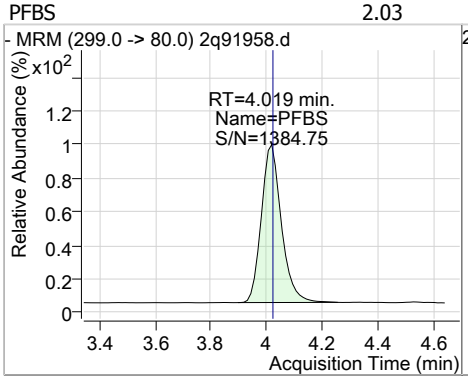
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.71	4.02	0.01	10532				

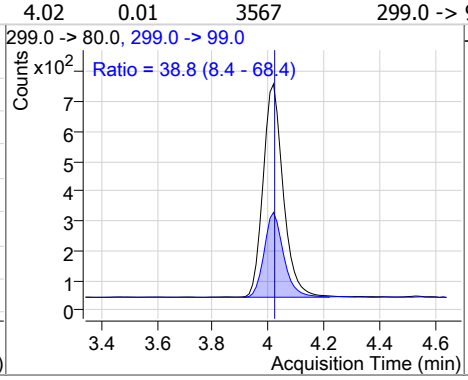


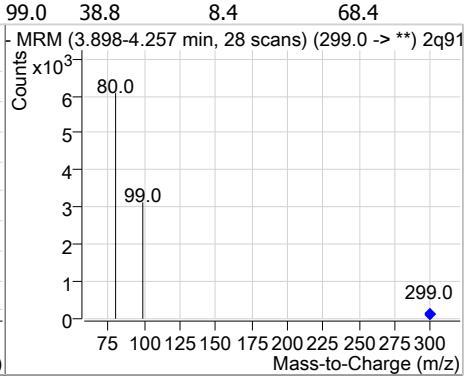




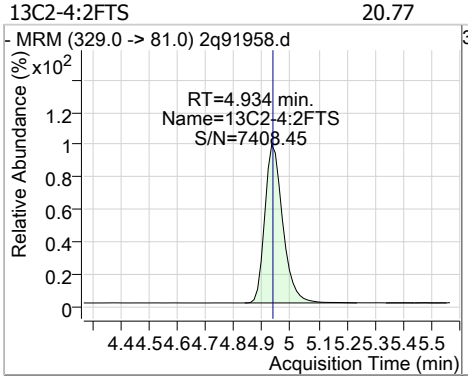
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.03	4.02	0.01	3567	299.0 -> 99.0	38.8	8.4	68.4

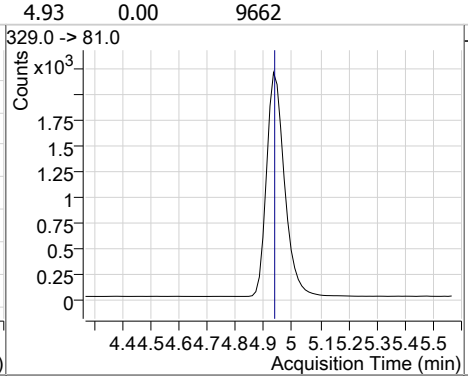


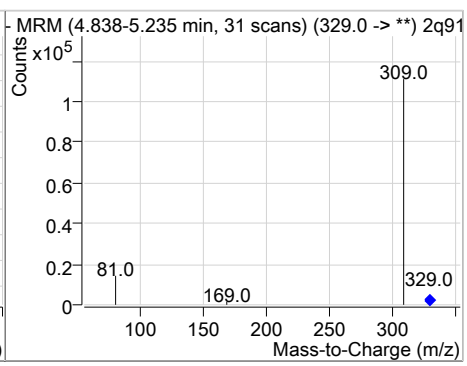




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.77	4.93	0.00	9662				

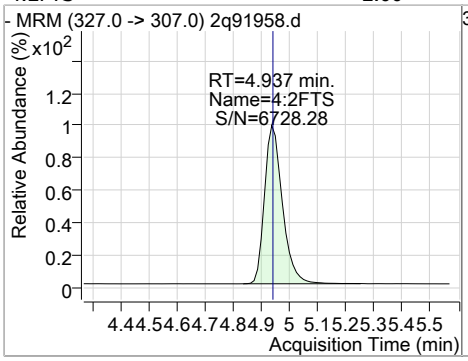


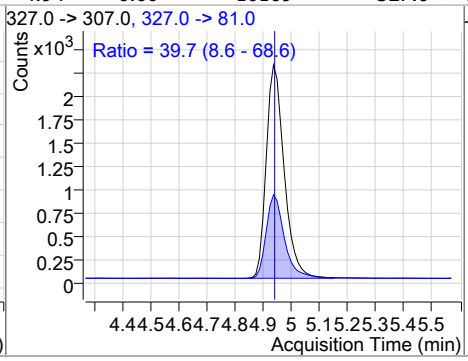


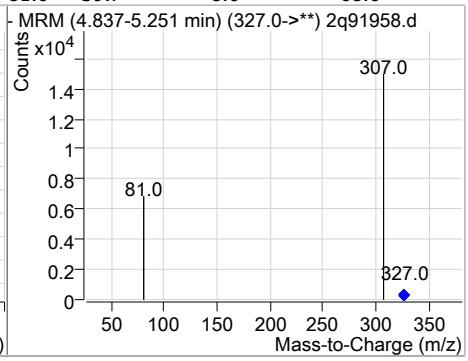


Perfluorinated Compounds by LC/MS/MS

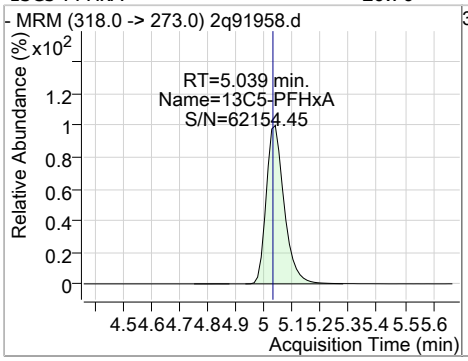
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	2.00	4.94	0.00	10109	327.0 -> 81.0	39.7	8.6	68.6

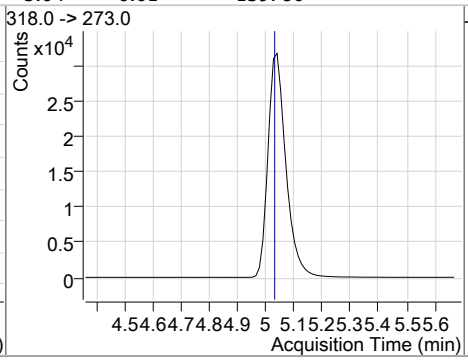


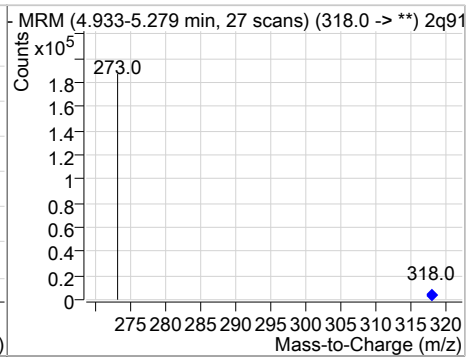




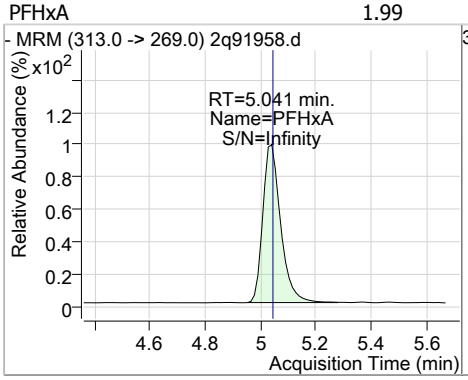
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.70	5.04	0.01	139780				

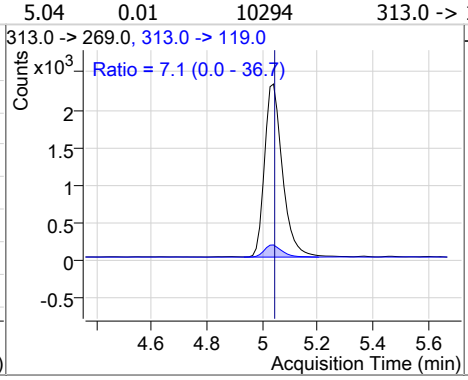


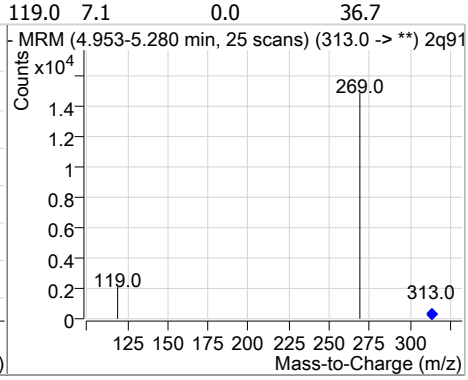




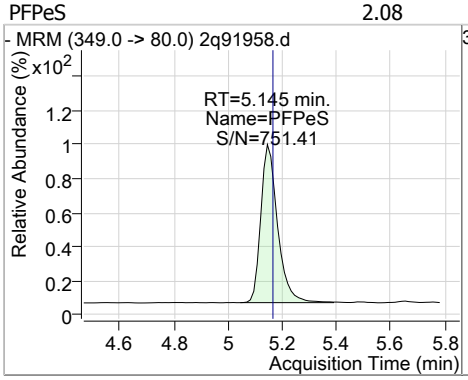
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.99	5.04	0.01	10294	313.0 -> 119.0	7.1	0.0	36.7

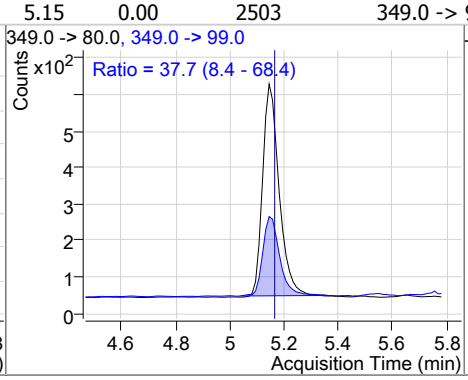


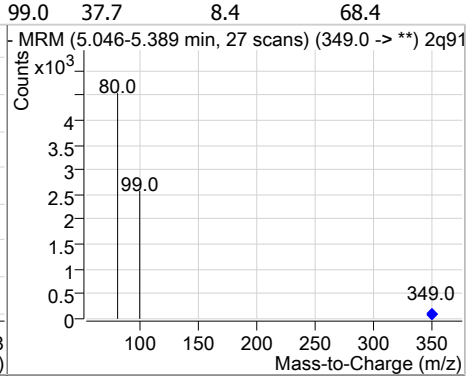




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.08	5.15	0.00	2503	349.0 -> 99.0	37.7	8.4	68.4

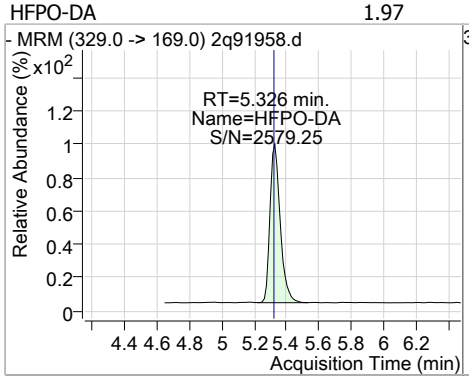


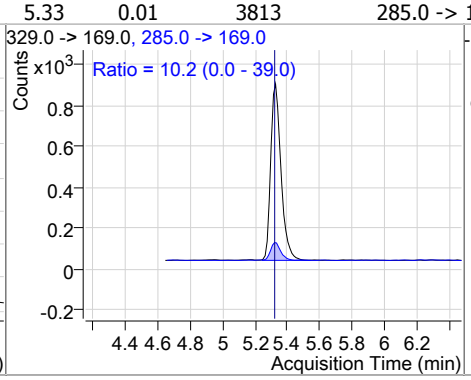


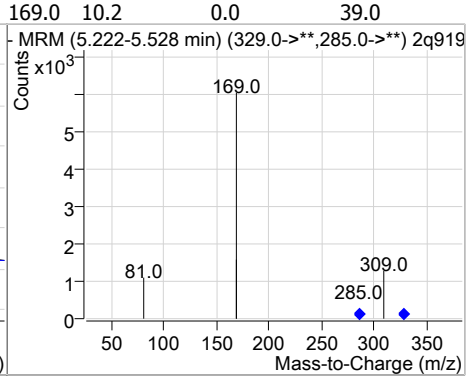


Perfluorinated Compounds by LC/MS/MS

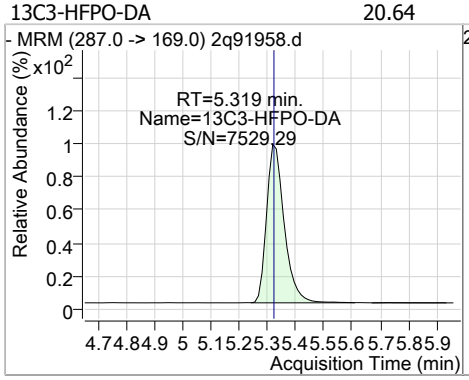
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.97	5.33	0.01	3813	285.0 -> 169.0	10.2	0.0	39.0

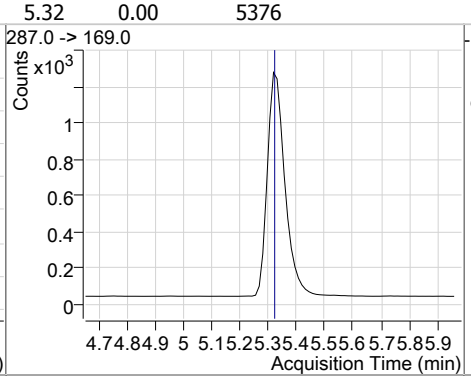


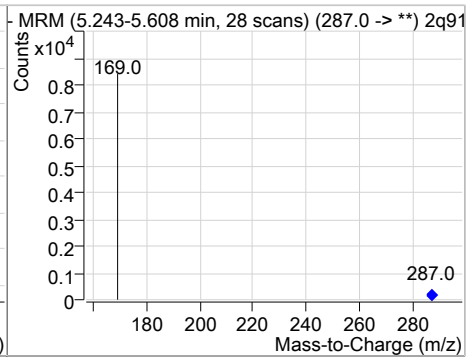




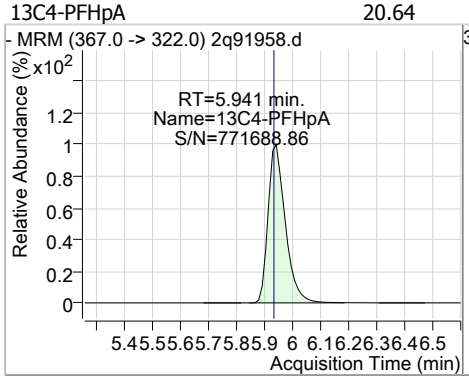
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.64	5.32	0.00	5376				

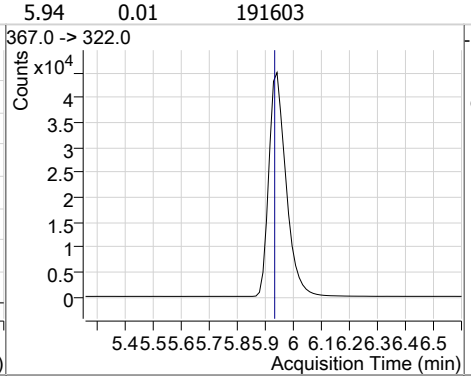


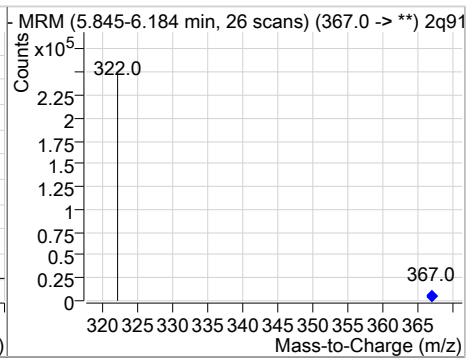




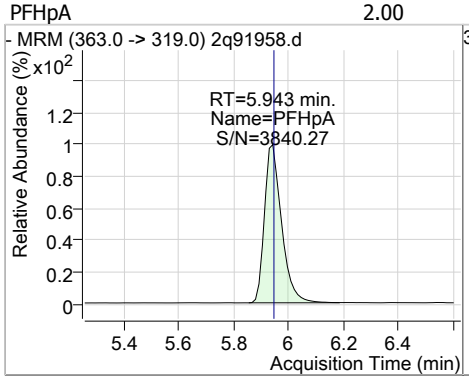
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.64	5.94	0.01	191603				

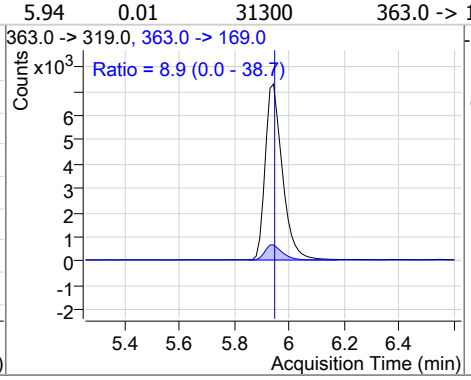


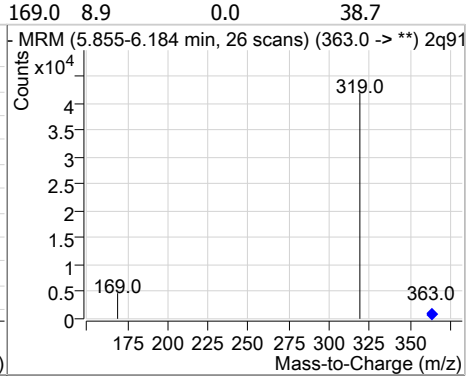




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.00	5.94	0.01	31300	363.0 -> 169.0	8.9	0.0	38.7

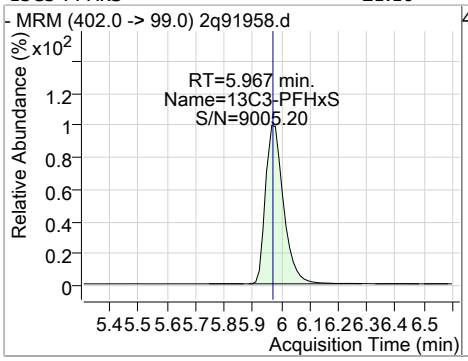


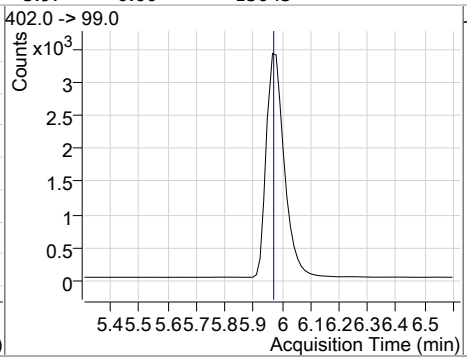


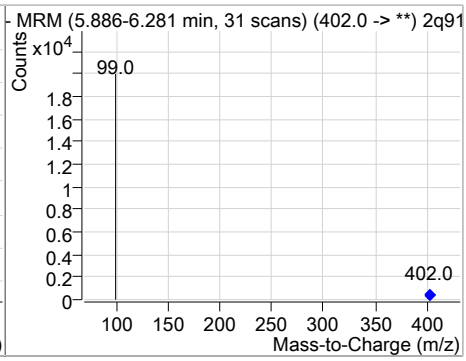


Perfluorinated Compounds by LC/MS/MS

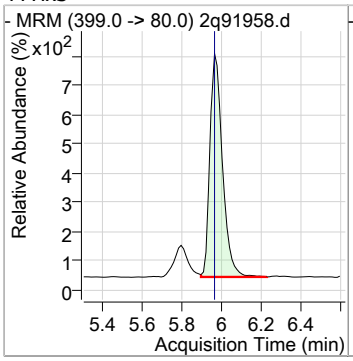
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.10	5.97	0.00	15045				

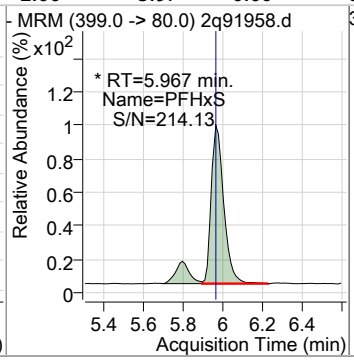


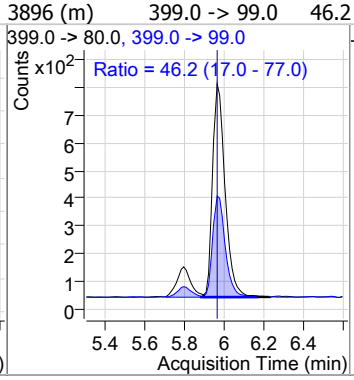


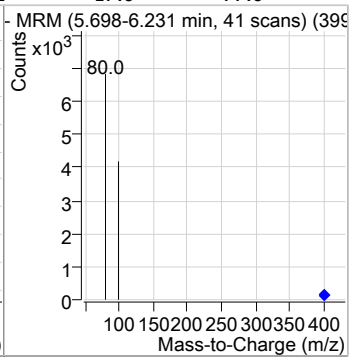


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.06	5.97	0.00	3896 (m)	399.0 -> 99.0	46.2	17.0	77.0

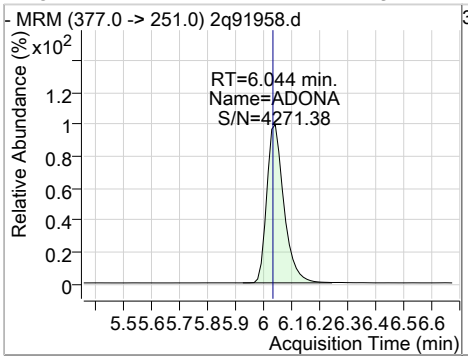


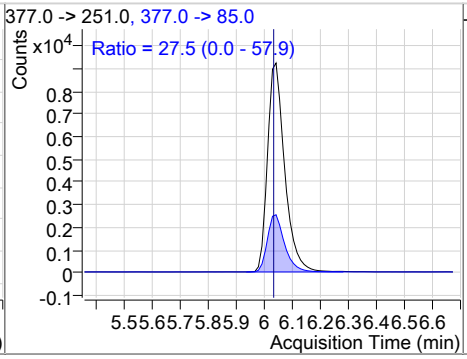


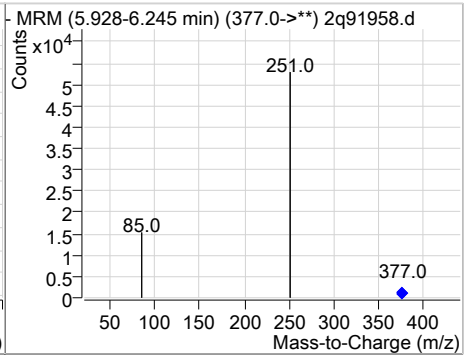




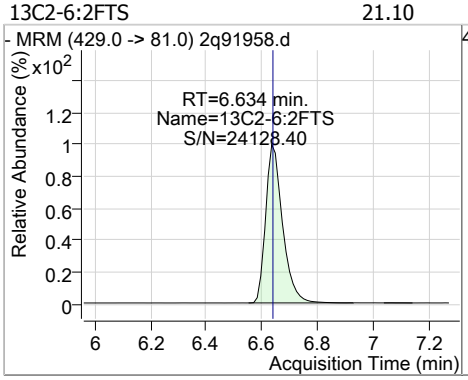
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	1.94	6.04	0.01	38988	377.0 -> 85.0	27.5	0.0	57.9

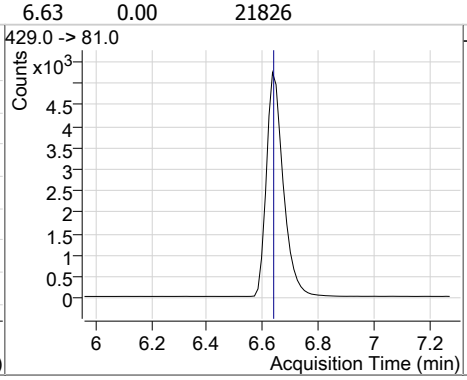


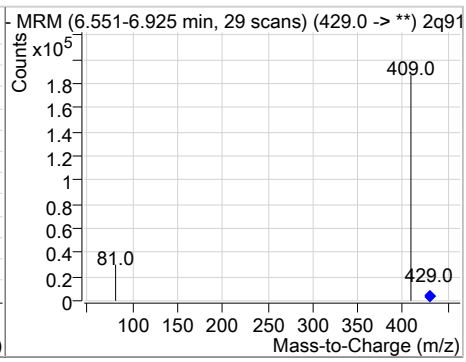




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.10	6.63	0.00	21826				

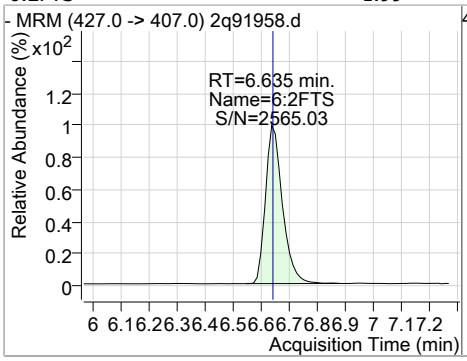


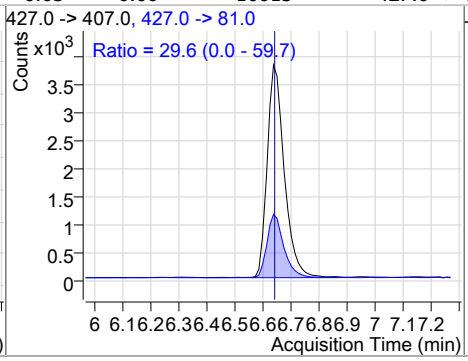


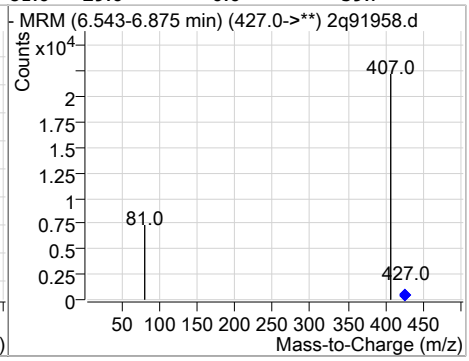


Perfluorinated Compounds by LC/MS/MS

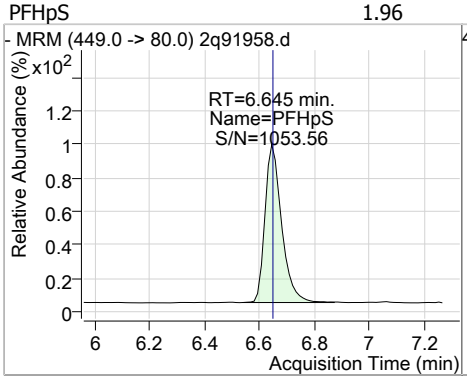
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.99	6.63	0.00	16013	427.0 -> 81.0	29.6	0.0	59.7

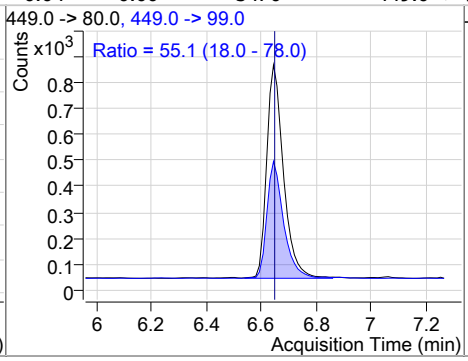


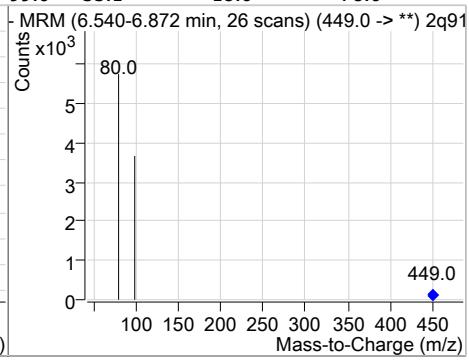




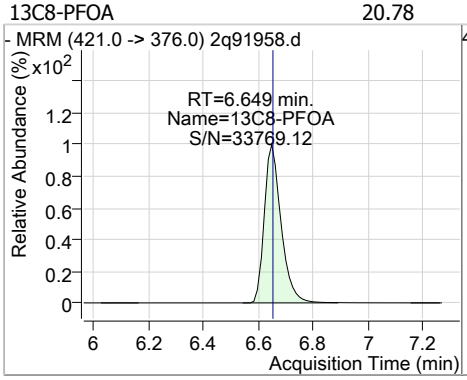
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.96	6.64	0.00	3470	449.0 -> 99.0	55.1	18.0	78.0

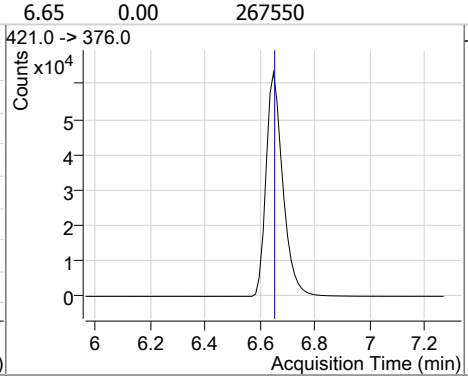


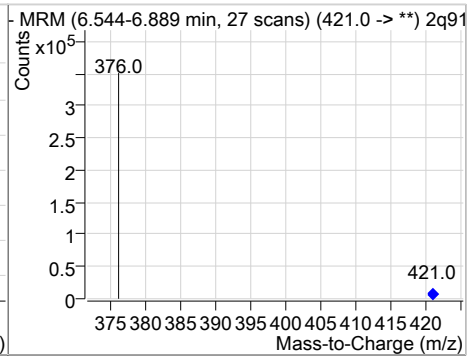




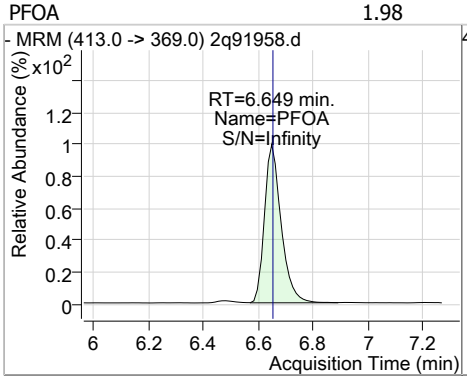
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.78	6.65	0.00	267550				

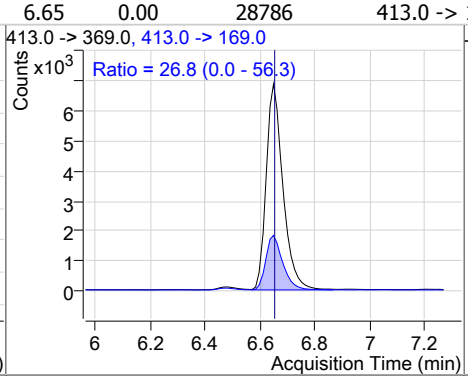


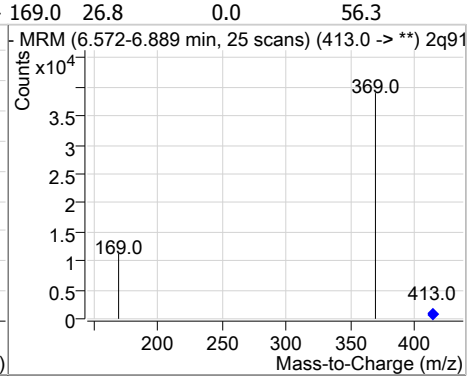




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.98	6.65	0.00	28786	413.0 -> 169.0	26.8	0.0	56.3

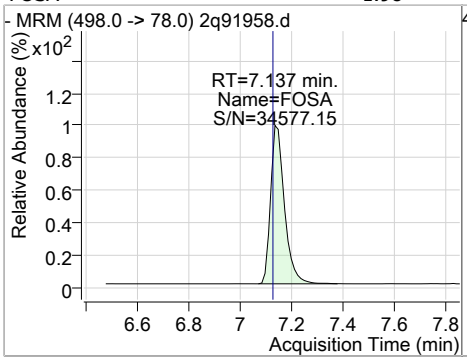


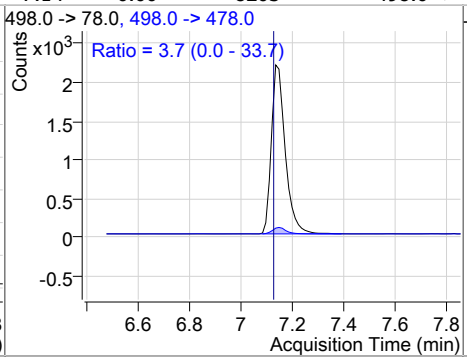


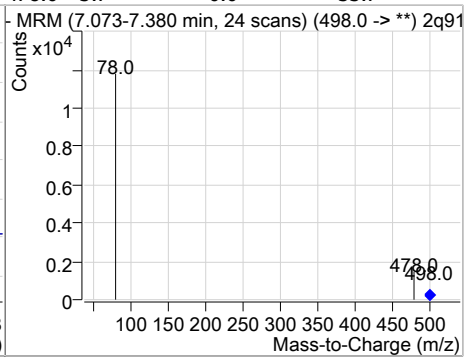


Perfluorinated Compounds by LC/MS/MS

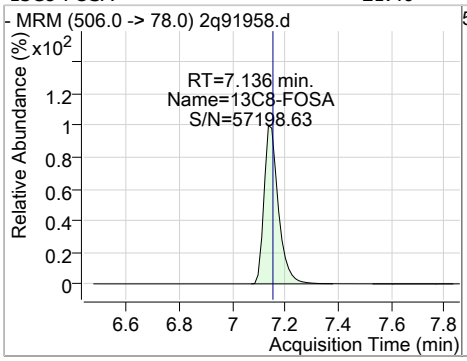
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.98	7.14	0.00	8203	498.0 -> 478.0	3.7	0.0	33.7

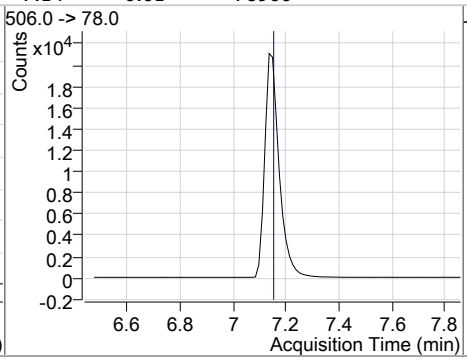


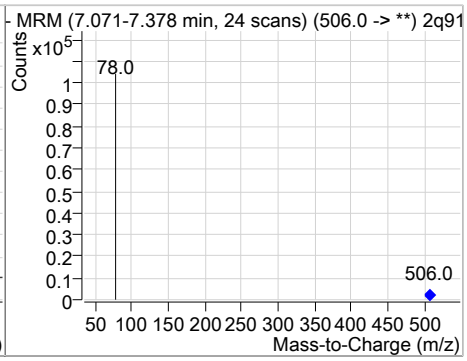




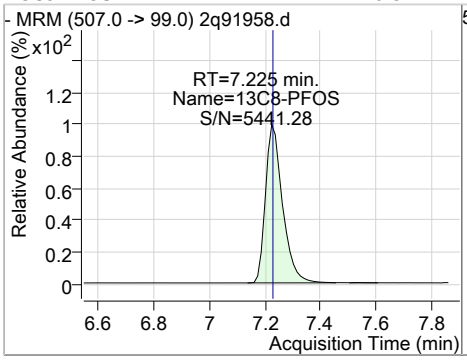
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.46	7.14	-0.01	78966				

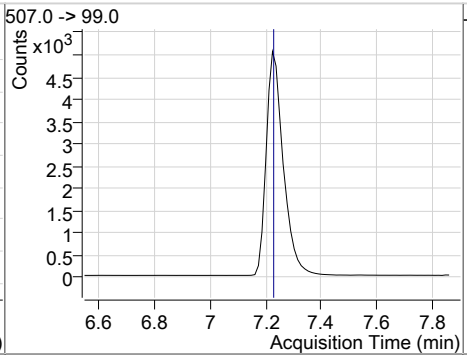


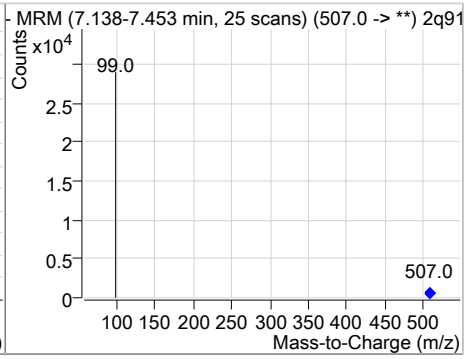




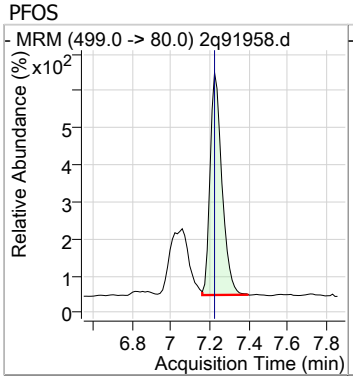
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.57	7.22	0.00	21345				

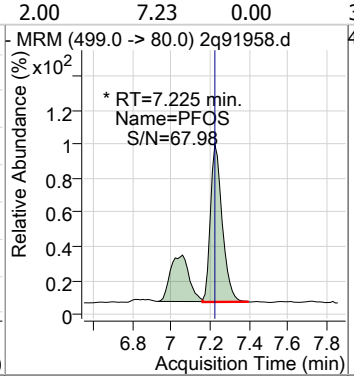


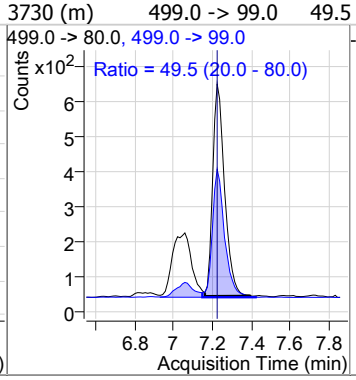


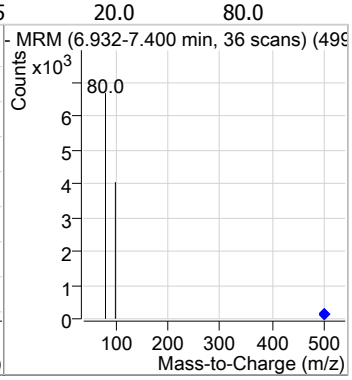


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.00	7.23	0.00	3730 (m)	499.0 -> 99.0	49.5	20.0	80.0



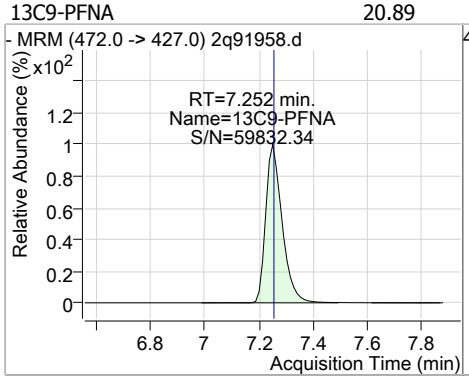


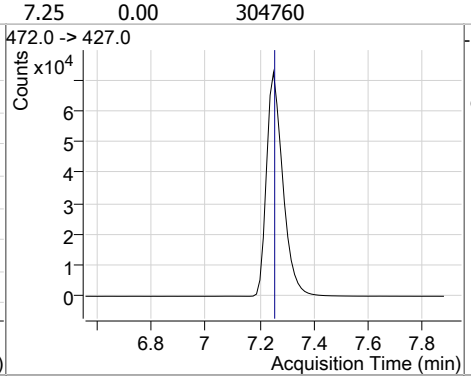


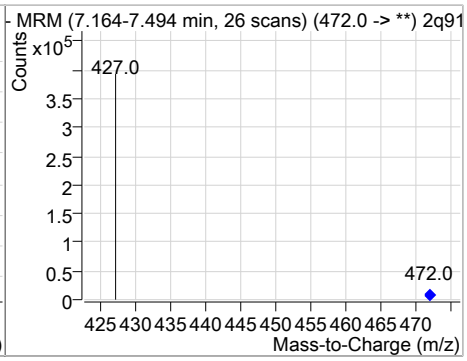


Perfluorinated Compounds by LC/MS/MS

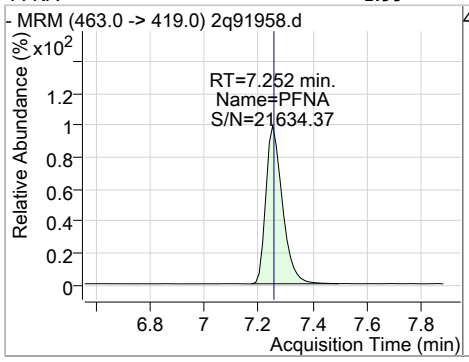
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.89	7.25	0.00	304760				

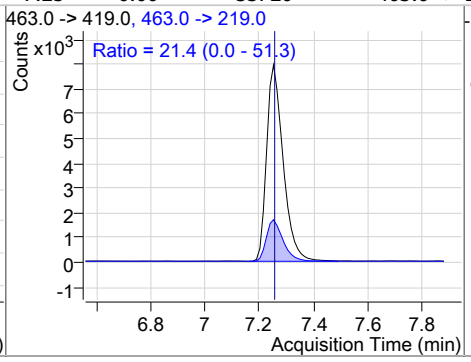


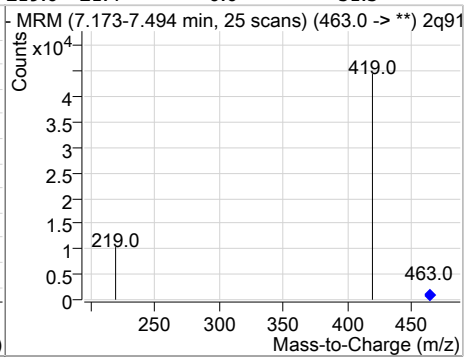




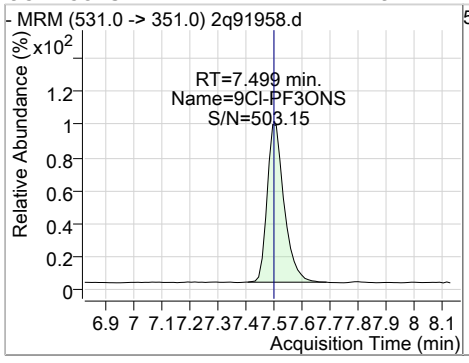
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.99	7.25	0.00	33720	463.0 -> 219.0	21.4	0.0	51.3

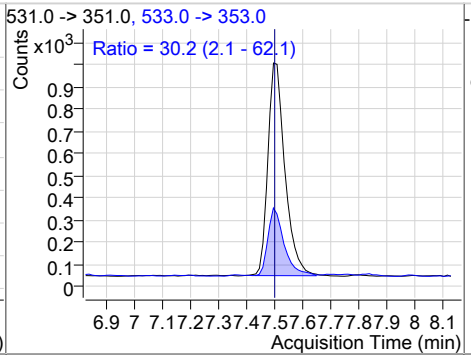


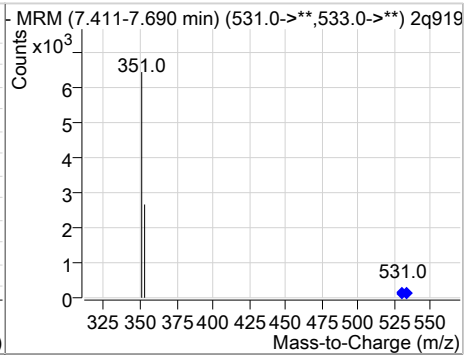




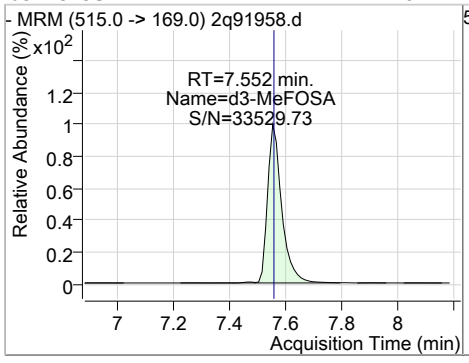
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.92	7.50	0.00	4048	533.0 -> 353.0	30.2	2.1	62.1

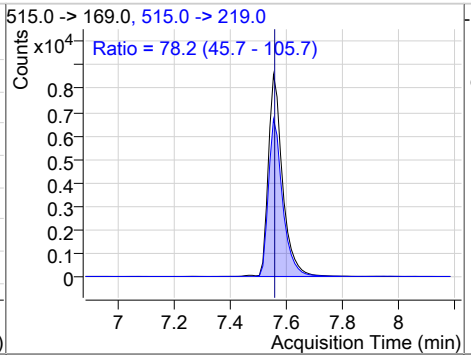


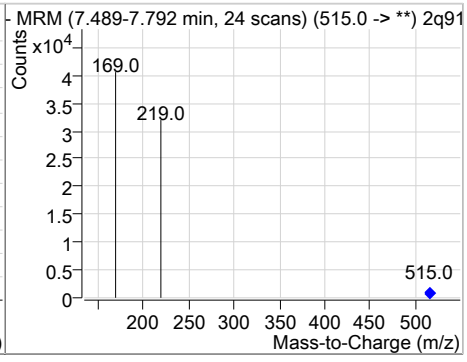




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	21.48	7.55	0.00	30058	515.0 -> 219.0	78.2	45.7	105.7

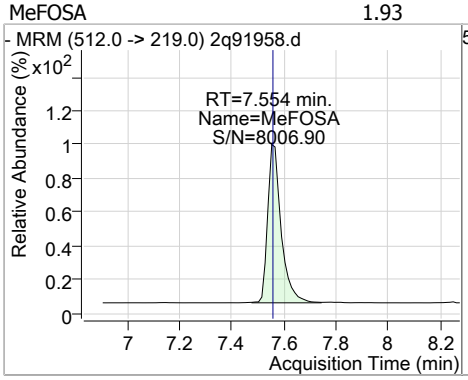


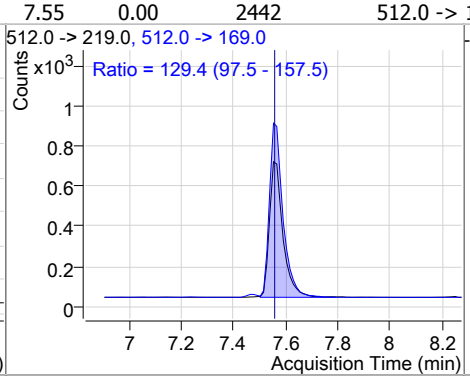


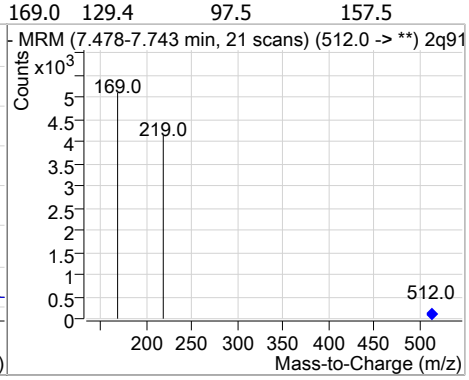


Perfluorinated Compounds by LC/MS/MS

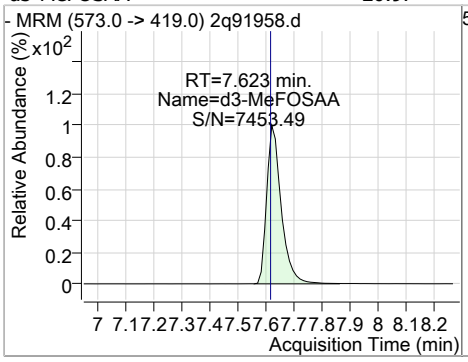
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.93	7.55	0.00	2442	512.0 -> 169.0	129.4	97.5	157.5

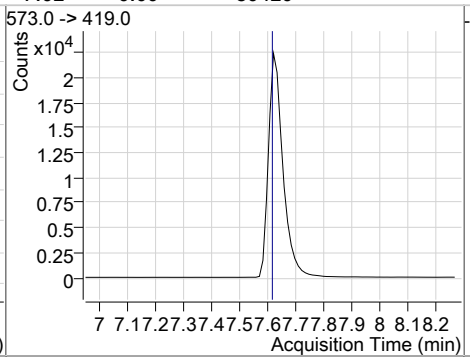


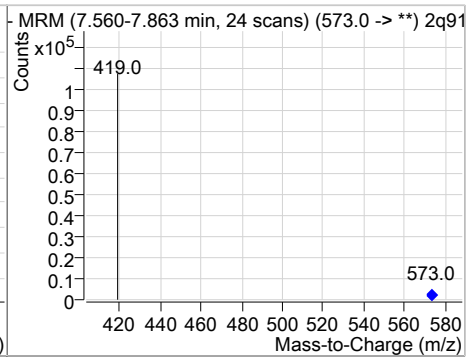




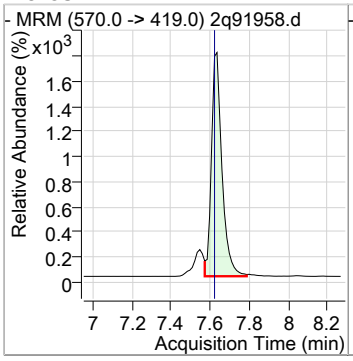
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.97	7.62	0.00	80426				

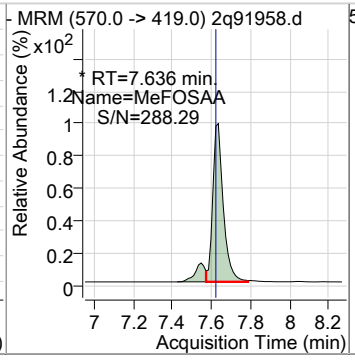


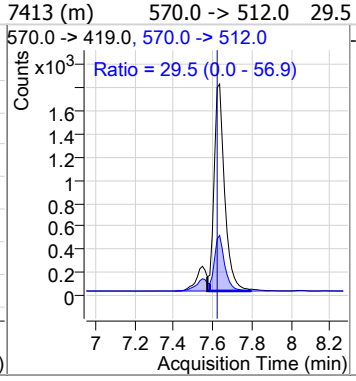


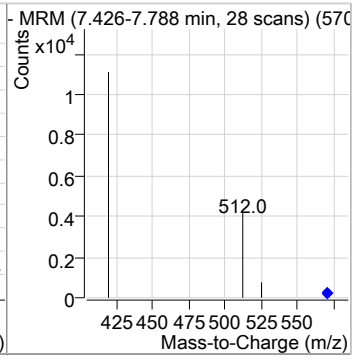


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.01	7.64	0.01	7413 (m)	570.0 -> 512.0	29.5	0.0	56.9

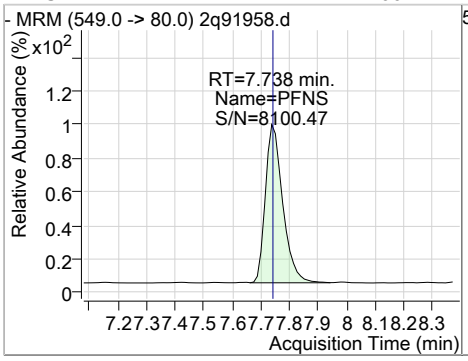


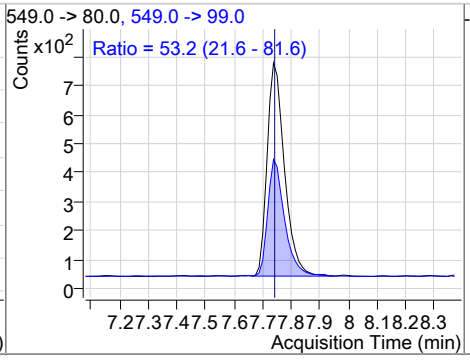


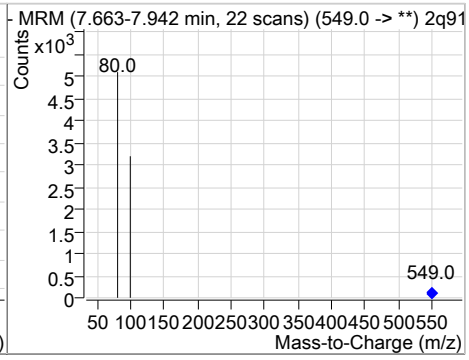




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.06	7.74	0.00	3093	549.0 -> 99.0	53.2	21.6	81.6

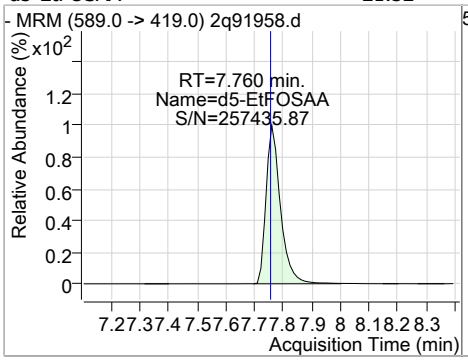


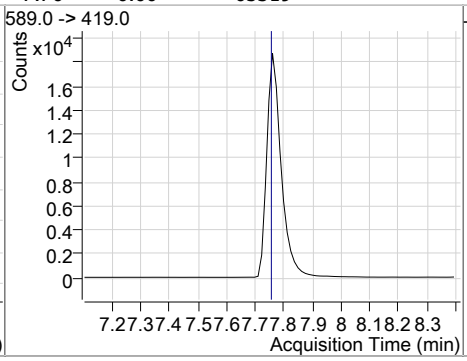


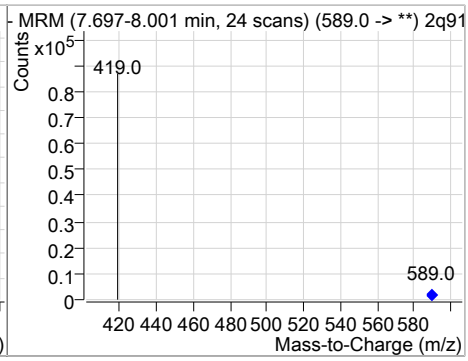


Perfluorinated Compounds by LC/MS/MS

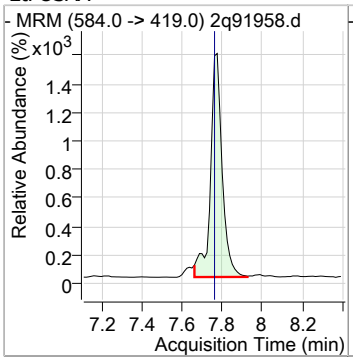
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	21.52	7.76	0.00	65319				

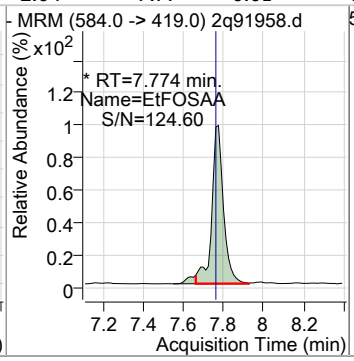


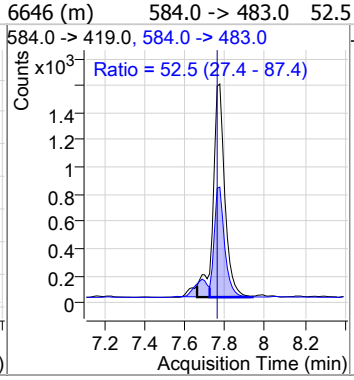


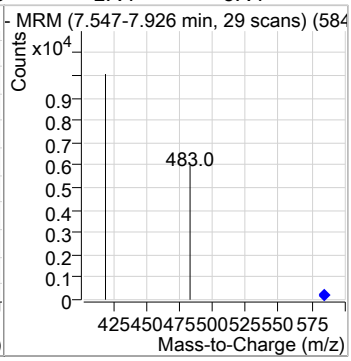


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.04	7.77	0.01	6646 (m)	584.0 -> 483.0	52.5	27.4	87.4

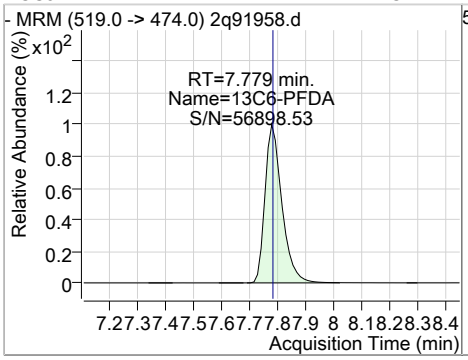


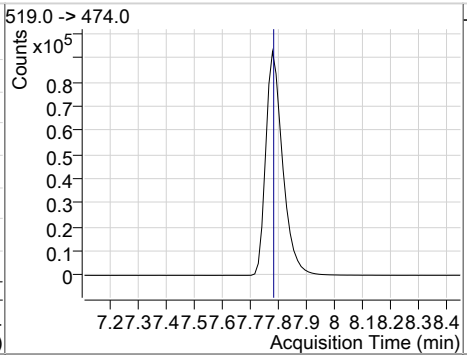


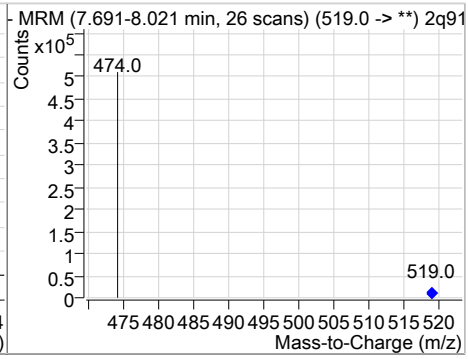




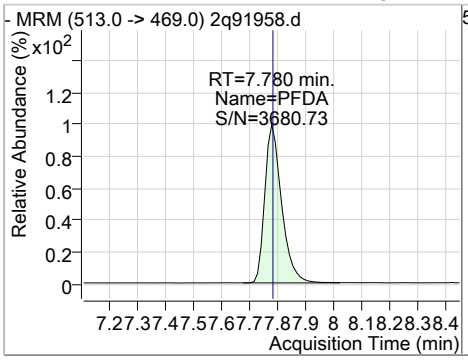
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.31	7.78	0.00	388159				

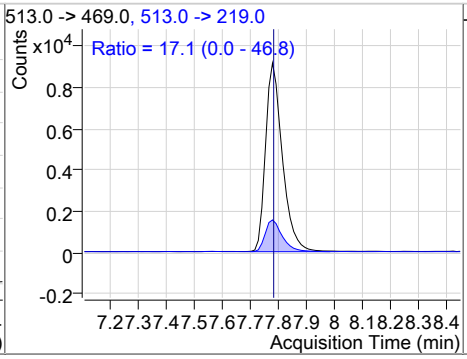


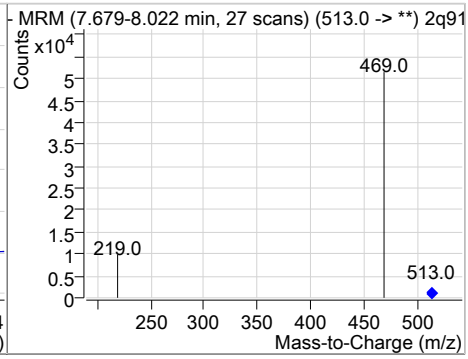




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.94	7.78	0.00	38116	513.0 -> 219.0	17.1	0.0	46.8

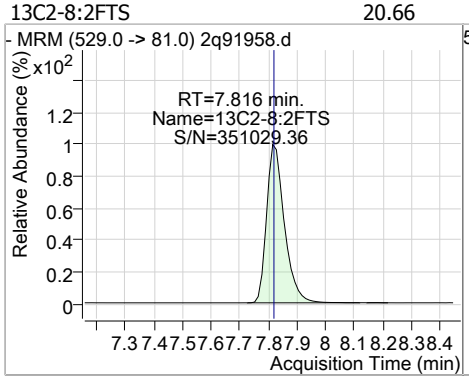


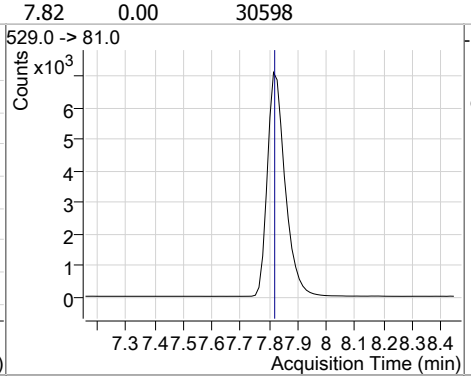


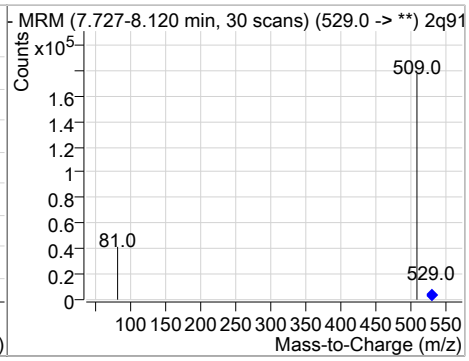


Perfluorinated Compounds by LC/MS/MS

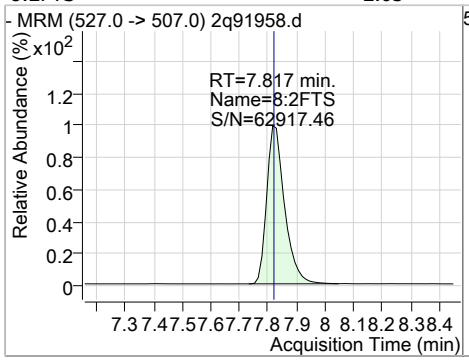
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.66	7.82	0.00	30598				

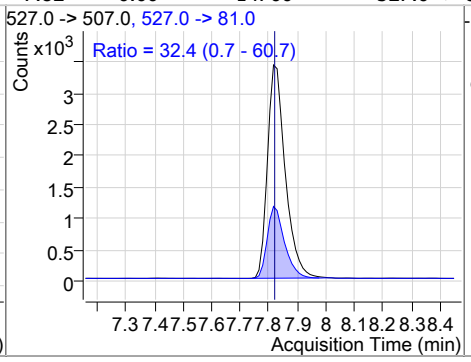


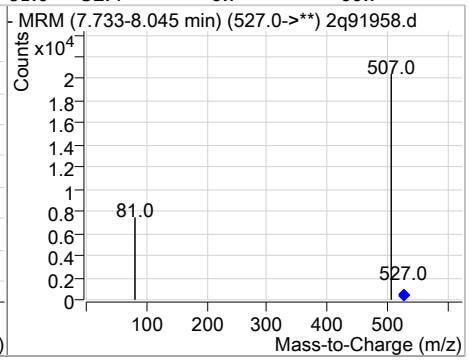




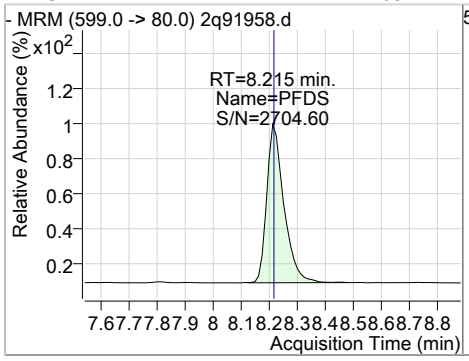
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	2.03	7.82	0.00	14766	527.0 -> 81.0	32.4	0.7	60.7

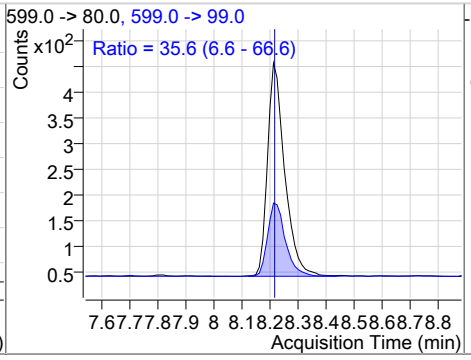


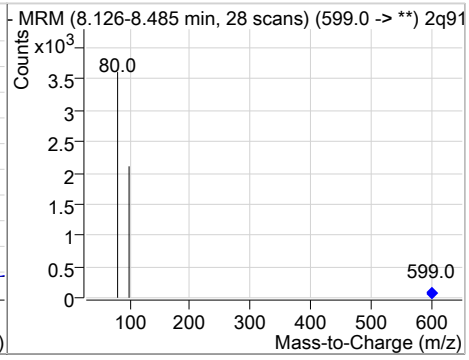




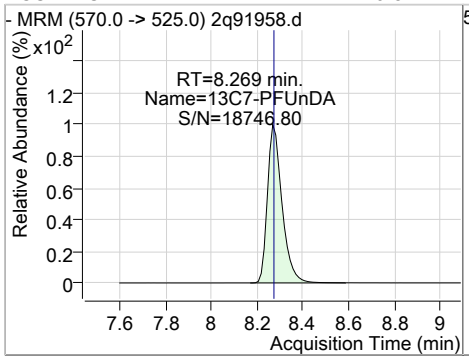
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.05	8.22	0.00	1766	599.0 -> 99.0	35.6	6.6	66.6

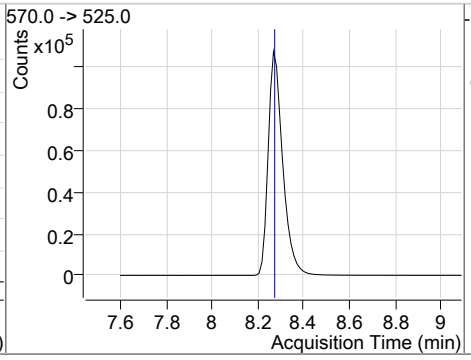


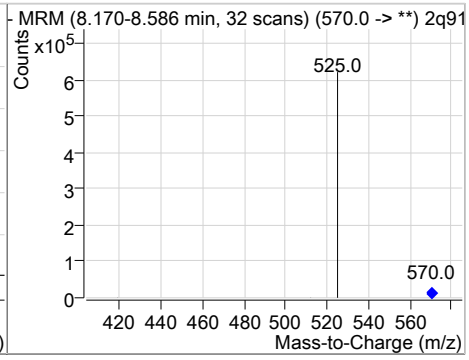




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.84	8.27	0.00	471618				

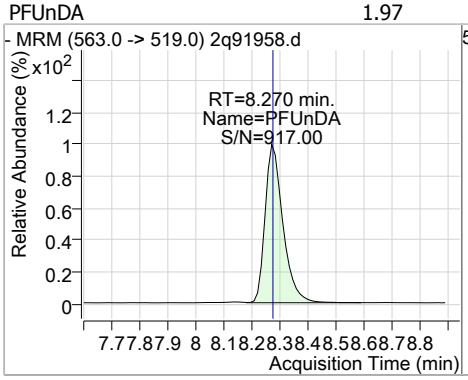


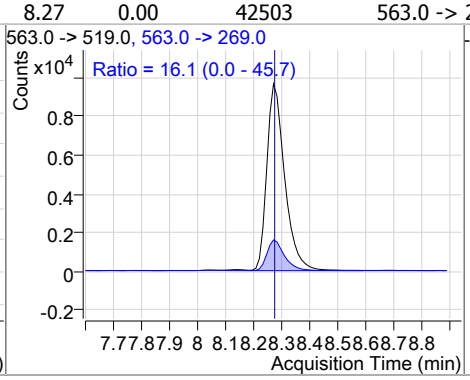


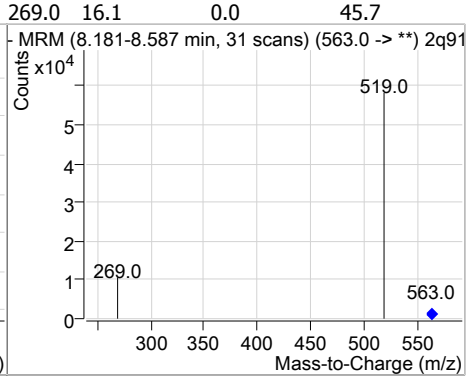


Perfluorinated Compounds by LC/MS/MS

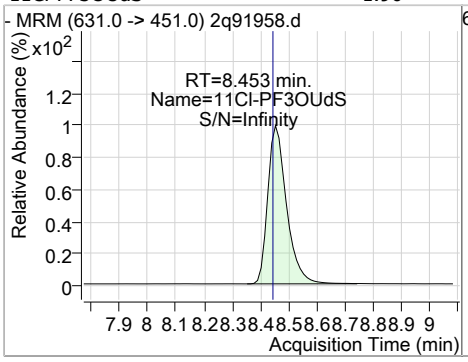
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	1.97	8.27	0.00	42503	563.0 -> 269.0	16.1	0.0	45.7

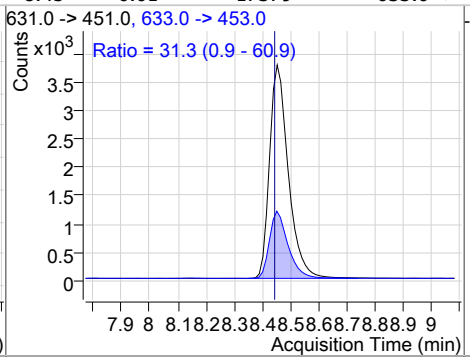


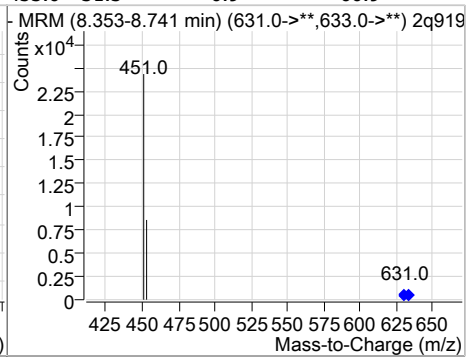




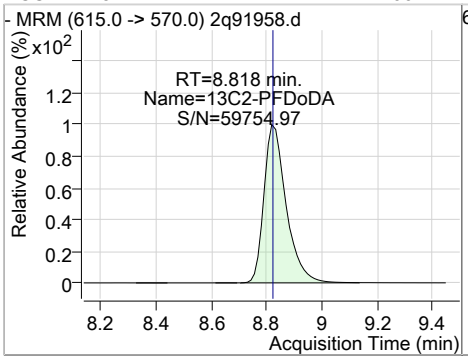
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.90	8.45	0.01	17379	633.0 -> 453.0	31.3	0.9	60.9

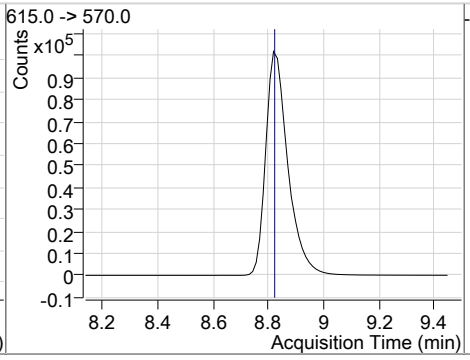


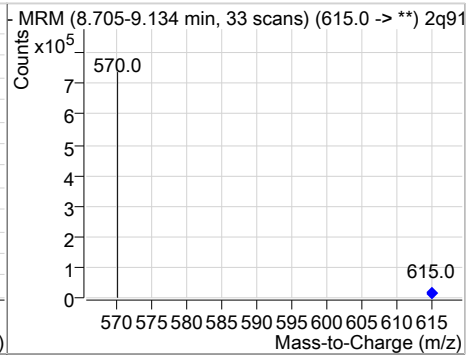




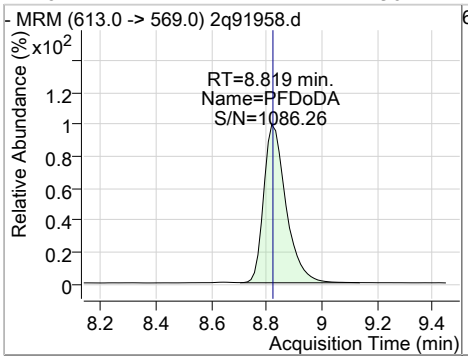
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.00	8.82	0.00	567261				

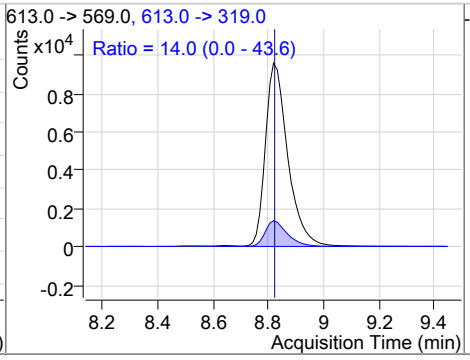


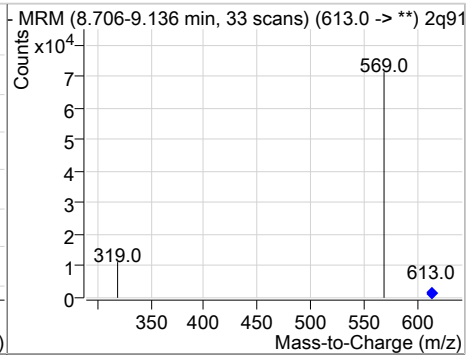




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.96	8.82	0.00	53440	613.0 -> 319.0	14.0	0.0	43.6

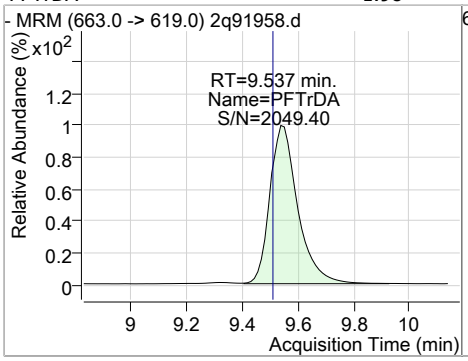


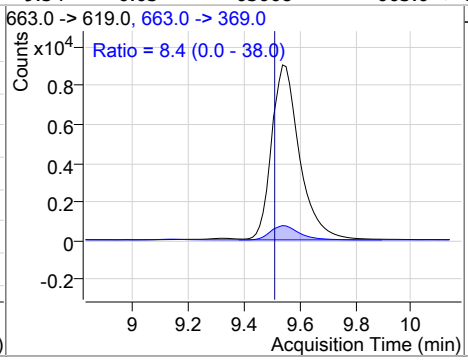


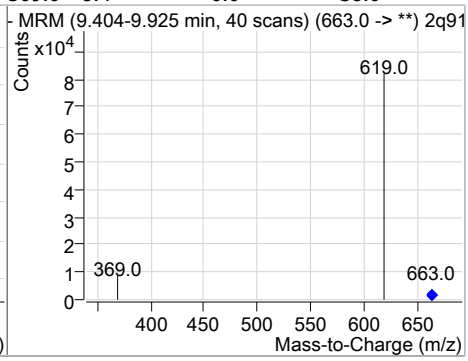


Perfluorinated Compounds by LC/MS/MS

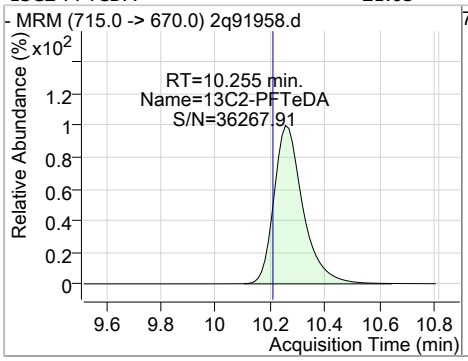
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.98	9.54	0.03	63008	663.0 -> 369.0	8.4	0.0	38.0

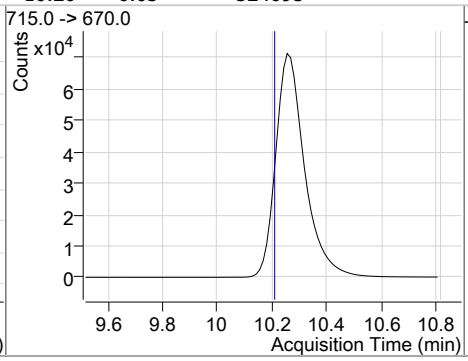


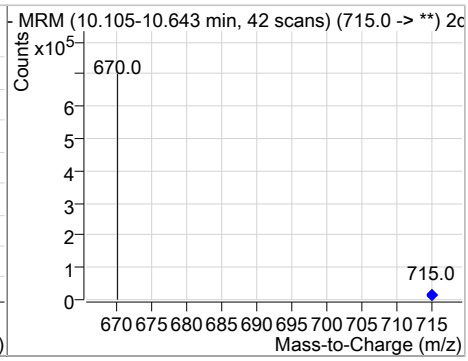




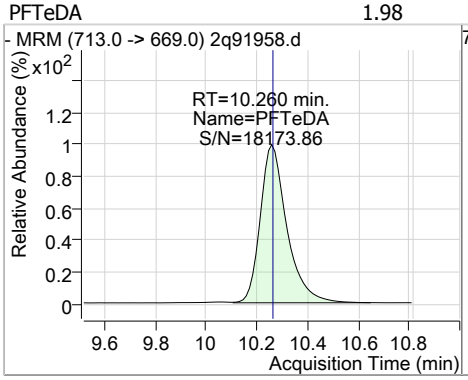
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.05	10.26	0.05	524095				

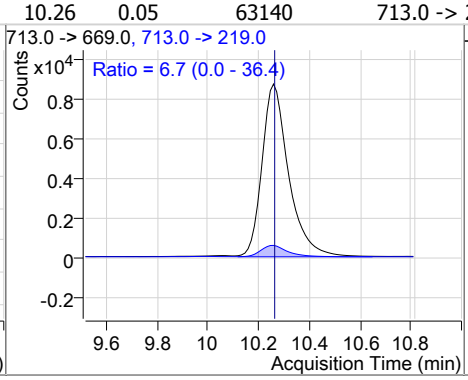


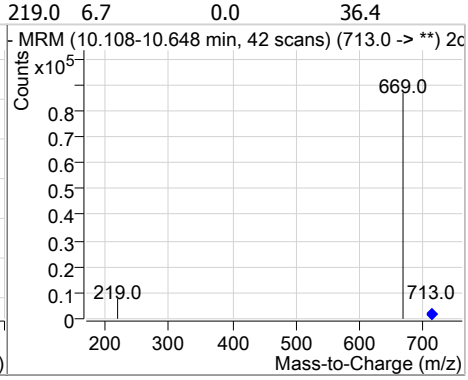




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.98	10.26	0.05	63140	713.0 -> 219.0	6.7	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91958.D
Injection Time: 05/27/22 12:42
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.64	Split peak
EtFOSAA	2991-50-6		7.77	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91959.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 1:00:59 PM
Sample Name : ic1287-5
Vial : P1-A5
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

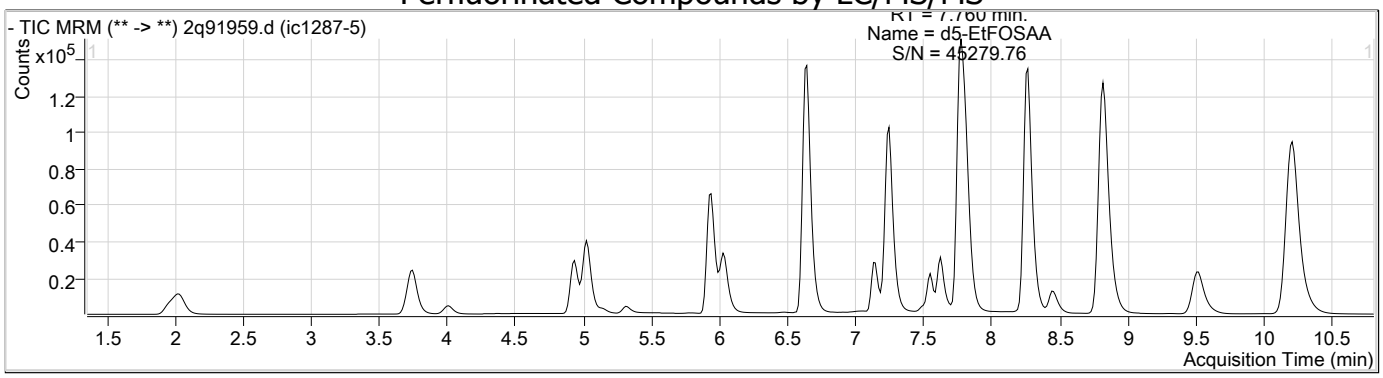
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	63906	20.00	µg/L	0.000
M4-PFBA	2.014	217.0 -> 172.0	80144	20.00	µg/L	0.000
M5-PFPeA	3.749	268.0 -> 223.0	94634	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	140639	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	192840	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	271959	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	307359	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	384514	20.00	µg/L	0.000
M7-PFUnDA	8.268	570.0 -> 525.0	475406	20.00	µg/L	0.000
M2-PFDoDA	8.818	615.0 -> 570.0	558762	20.00	µg/L	0.000
M2-PFTeDA	10.205	715.0 -> 670.0	514621	20.00	µg/L	0.000
M8-FOSA	7.136	506.0 -> 78.0	79564	20.00	µg/L	-0.013
M3-PFBS	4.004	302.0 -> 99.0	10622	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	14922	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	21875	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	9753	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	21633	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	30942	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	80024	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	5296	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	29912	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	9753	20.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.8%		
13C2-6:2FTS	6.634	429.0 -> 81.0	21633	20.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C2-8:2FTS	7.816	529.0 -> 81.0	30942	20.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%		
13C2-PFDoDA	8.818	615.0 -> 570.0	558762	20.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%		
13C2-PFTeDA	10.205	715.0 -> 670.0	514621	20.67	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%		
13C3-PFBS	4.004	302.0 -> 99.0	10622	20.89	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C3-PFHxS	5.967	402.0 -> 99.0	14922	20.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C4-PFBA	2.014	217.0 -> 172.0	80144	20.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%		
13C4-PFHpA	5.929	367.0 -> 322.0	192840	20.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
d5-EtFOSAA	7.760	589.0 -> 419.0	63906	21.05	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.3%		
13C5-PFHxA	5.027	318.0 -> 273.0	140639	20.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C5-PFPeA	3.749	268.0 -> 223.0	94634	20.76	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

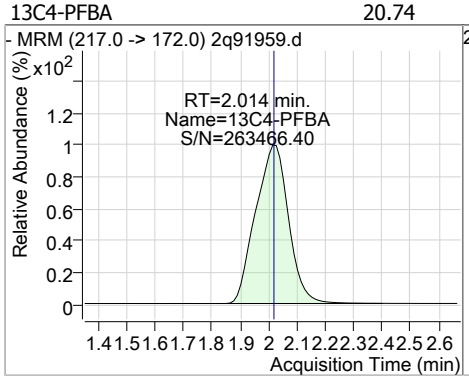
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
13C6-PFDA	7.779	519.0 -> 474.0	384514	21.11 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C7-PFUnDA	8.268	570.0 -> 525.0	475406	21.01 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.0%		
13C8-FOSA	7.136	506.0 -> 78.0	79564	21.62 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.1%		
13C8-PFOA	6.649	421.0 -> 376.0	271959	21.12 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C8-PFOS	7.225	507.0 -> 99.0	21875	21.08 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.4%		
13C9-PFNA	7.252	472.0 -> 427.0	307359	21.07 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.4%		
d3-MeFOSAA	7.623	573.0 -> 419.0	80024	20.87 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
13C3-HFPO-DA	5.319	287.0 -> 169.0	5296	20.34 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
d3-MeFOSA	7.552	515.0 -> 169.0	29912	21.37 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.9%		
Target Compounds						QValue
4:2FTS	4.937	327.0 -> 307.0	24610	4.82 µg/L		99
6:2FTS	6.635	427.0 -> 407.0	39730	4.98 µg/L		99
8:2FTS	7.817	527.0 -> 507.0	35847	4.86 µg/L		97
EtFOSAA	7.761	584.0 -> 419.0	15479	4.86 µg/L	m	98
FOSA	7.137	498.0 -> 78.0	20087	4.81 µg/L		99
MeFOSAA	7.623	570.0 -> 419.0	17761	4.83 µg/L	m	98
PFBA	2.021	213.0 -> 169.0	10126	4.93 µg/L		100
PFBS	4.007	299.0 -> 80.0	8786	4.96 µg/L		100
PFDA	7.780	513.0 -> 469.0	95025	4.88 µg/L		100
PFDoDA	8.819	613.0 -> 569.0	129940	4.85 µg/L		100
PFDS	8.215	599.0 -> 80.0	4232	4.88 µg/L		98
PFHpA	5.930	363.0 -> 319.0	76772	4.87 µg/L		100
PFHpS	6.645	449.0 -> 80.0	8863	5.05 µg/L		99
PFHxA	5.028	313.0 -> 269.0	24955	4.80 µg/L		99
PFHxS	5.967	399.0 -> 80.0	9234	4.93 µg/L	m	98
PFNA	7.252	463.0 -> 419.0	81193	4.75 µg/L		100
PFNS	7.738	549.0 -> 80.0	7590	4.93 µg/L		98
PFOA	6.649	413.0 -> 369.0	72247	4.89 µg/L		100
PFOS	7.225	499.0 -> 80.0	9112	4.76 µg/L	m	100
PFPeA	3.751	263.0 -> 219.0	35907	4.93 µg/L		100
PFPeS	5.145	349.0 -> 80.0	5943	4.91 µg/L		99
PFTeDA	10.210	713.0 -> 669.0	153513	4.90 µg/L		100
PFTrDA	9.504	663.0 -> 619.0	149573	4.77 µg/L		100
PFUnDA	8.270	563.0 -> 519.0	104986	4.82 µg/L		99
11Cl-PF3OUdS	8.453	631.0 -> 451.0	42568	4.73 µg/L		99
9Cl-PF3ONS	7.499	531.0 -> 351.0	9973	4.79 µg/L		98
ADONA	6.032	377.0 -> 251.0	95251	4.66 µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	9614	5.04 µg/L		99
MeFOSA	7.554	512.0 -> 219.0	6212	4.92 µg/L		99

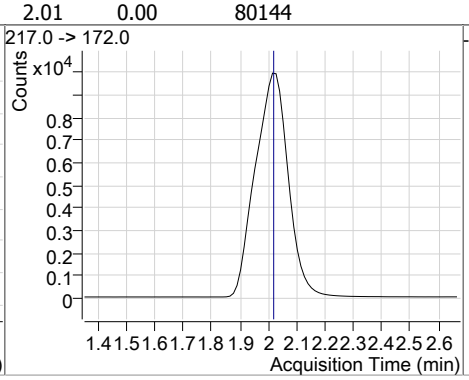
= Qualifier out of range, m = manually integrated, + = Area summed

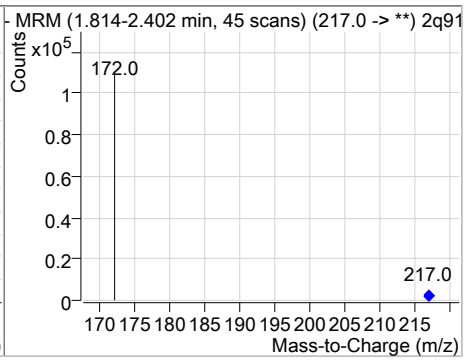
Perfluorinated Compounds by LC/MS/MS



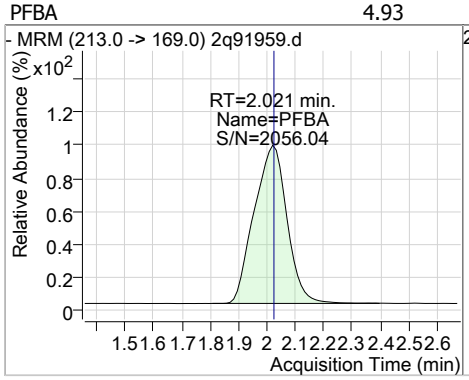
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.74	2.01	0.00	80144				

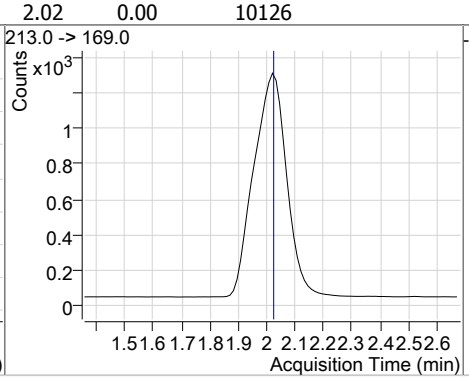


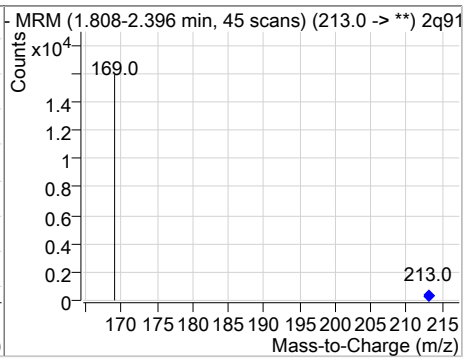




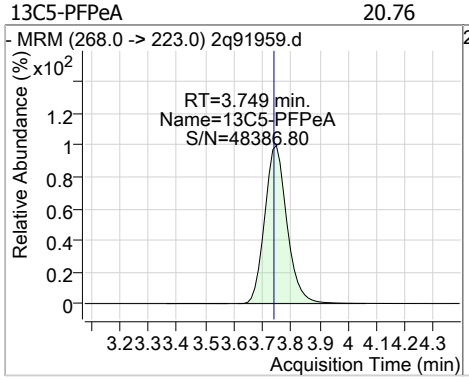
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	4.93	2.02	0.00	10126				

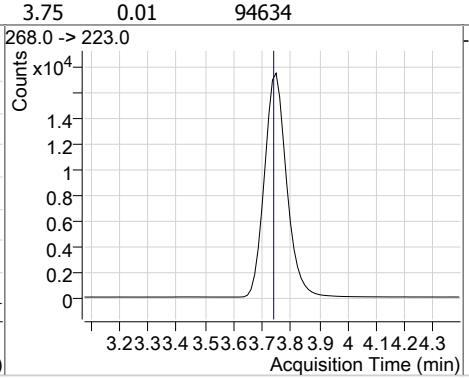


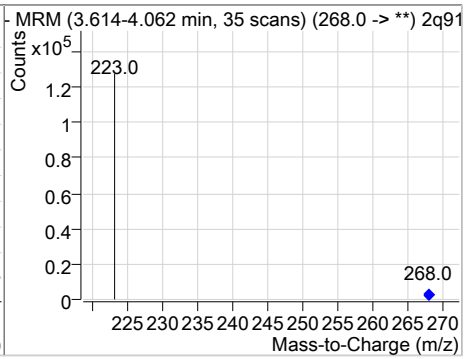




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.76	3.75	0.01	94634				

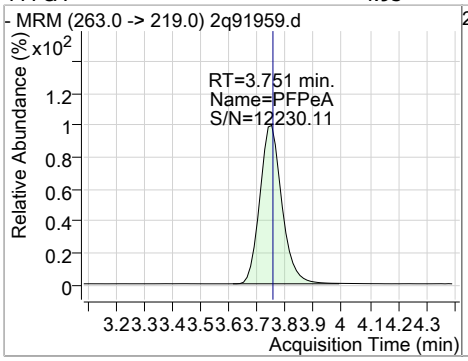


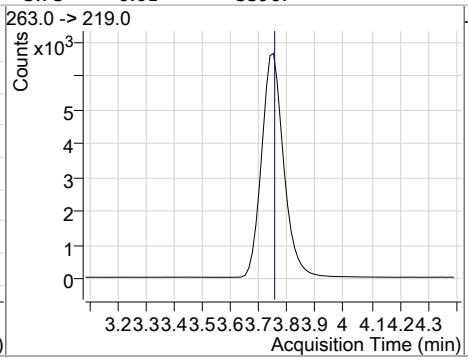


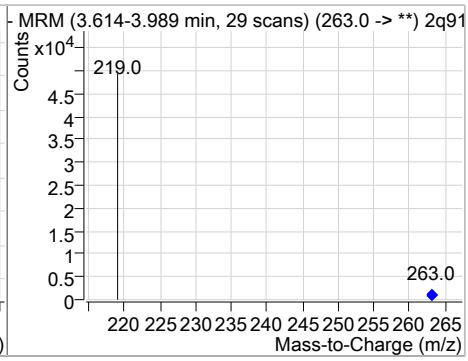


Perfluorinated Compounds by LC/MS/MS

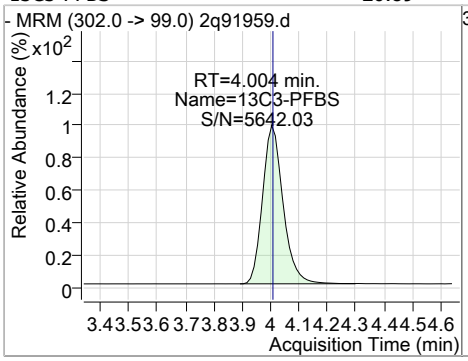
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.93	3.75	0.01	35907				

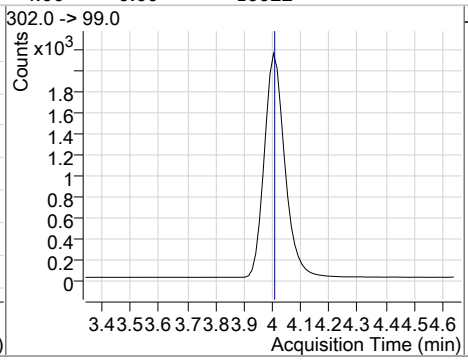


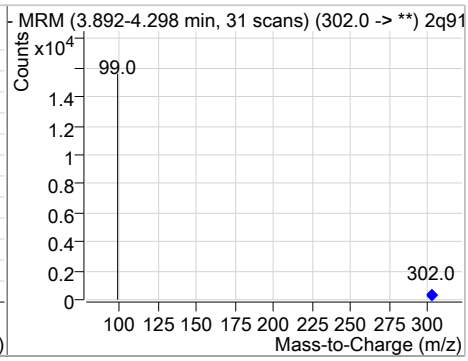




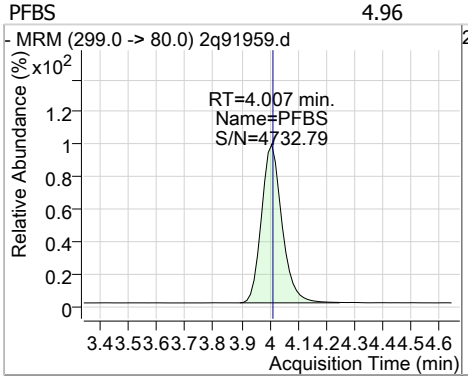
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.89	4.00	0.00	10622				

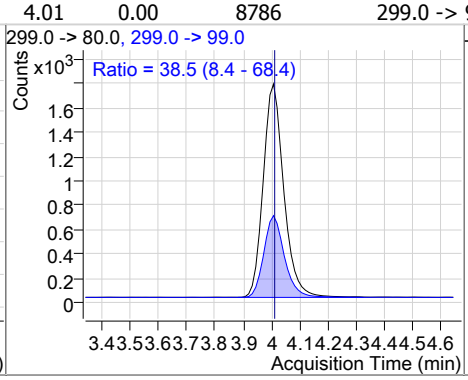


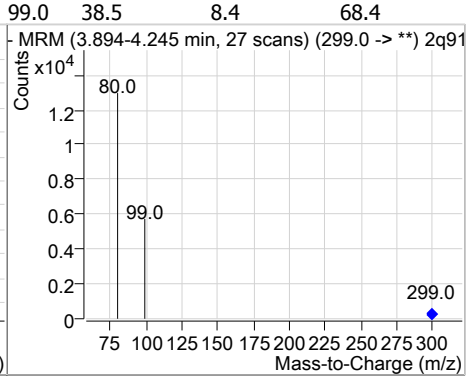




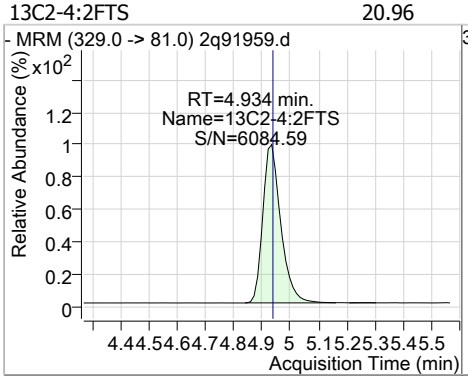
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.96	4.01	0.00	8786	299.0 -> 99.0	38.5	8.4	68.4

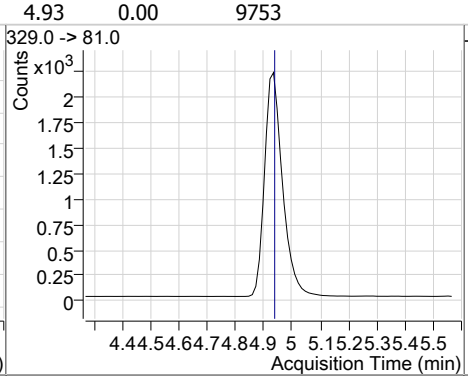


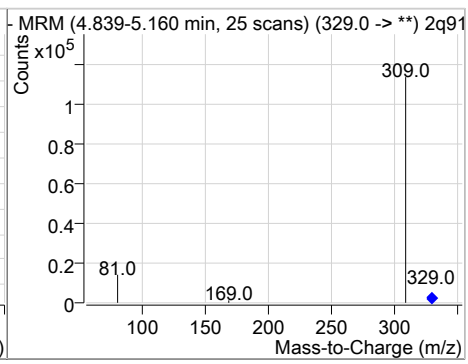




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.96	4.93	0.00	9753				

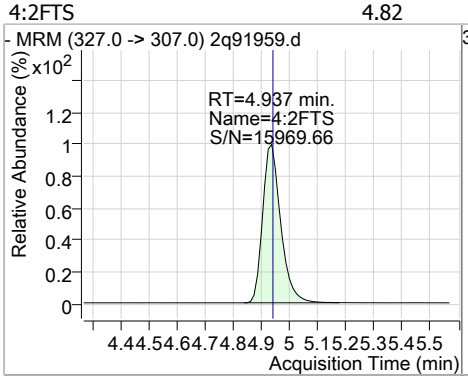


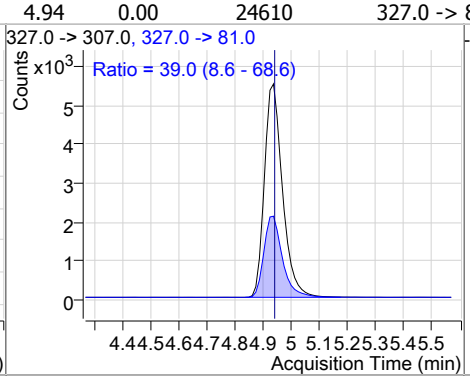


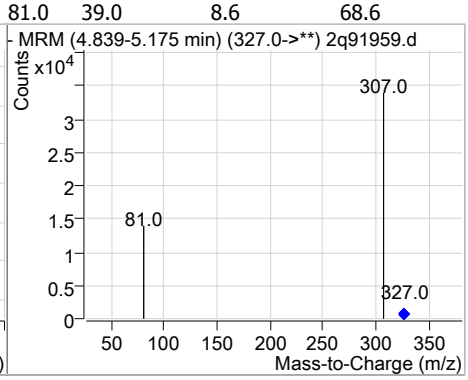


Perfluorinated Compounds by LC/MS/MS

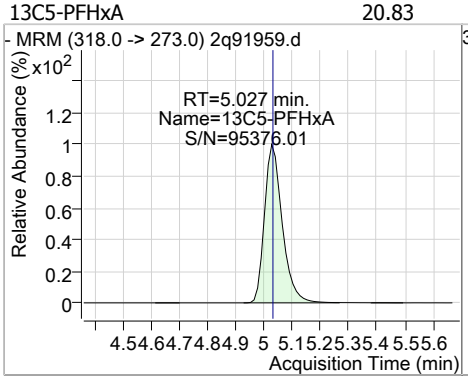
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	4.82	4.94	0.00	24610	327.0 -> 81.0	39.0	8.6	68.6

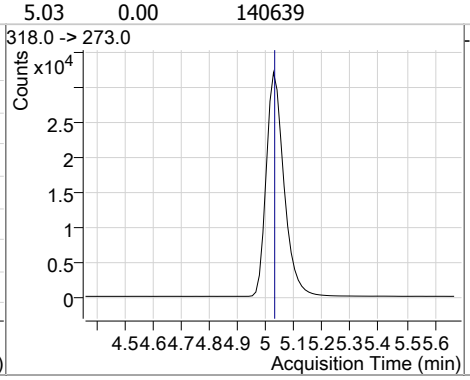


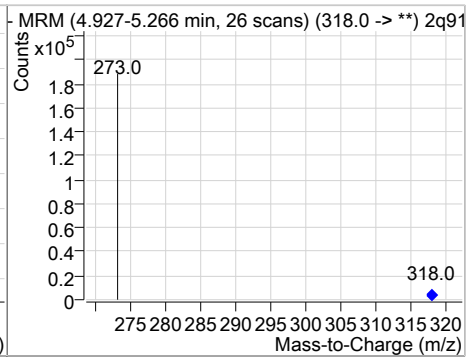




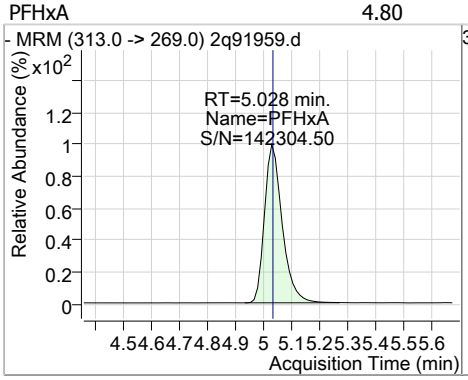
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.83	5.03	0.00	140639				

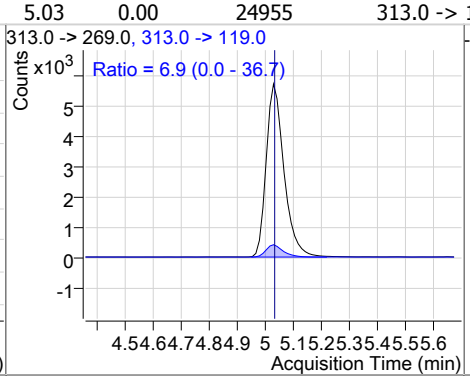


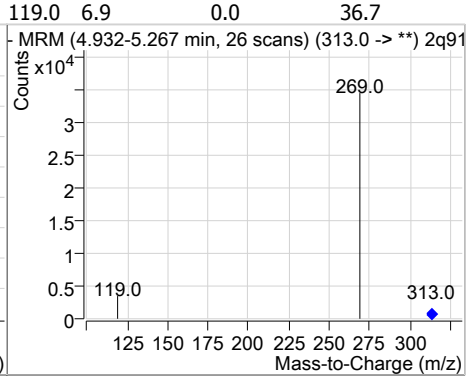




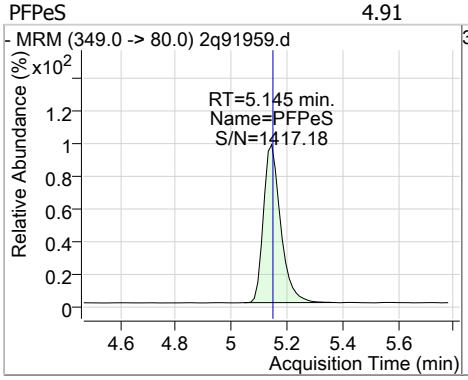
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.80	5.03	0.00	24955	313.0 -> 119.0	6.9	0.0	36.7

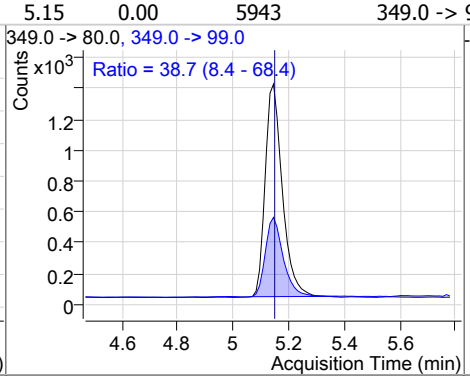


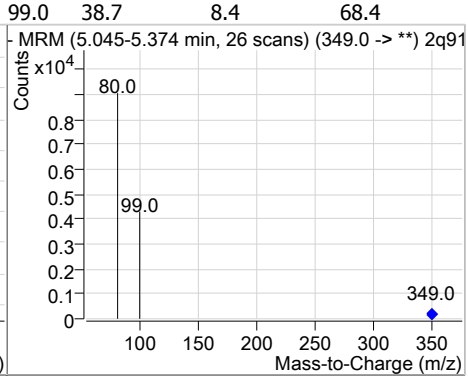




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	4.91	5.15	0.00	5943	349.0 -> 99.0	38.7	8.4	68.4

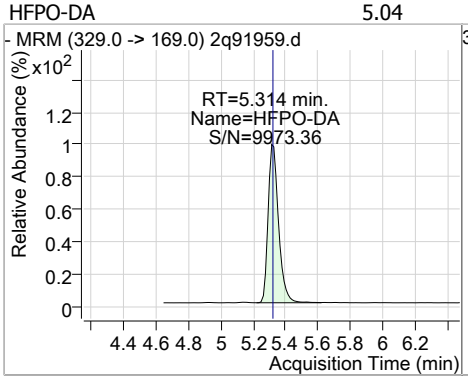


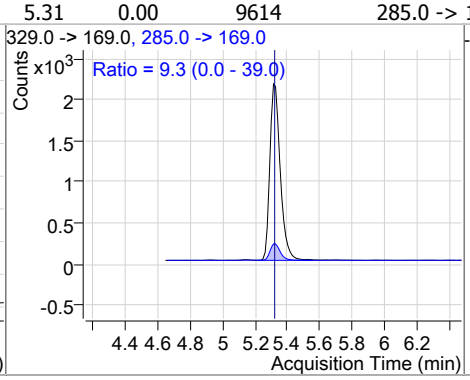


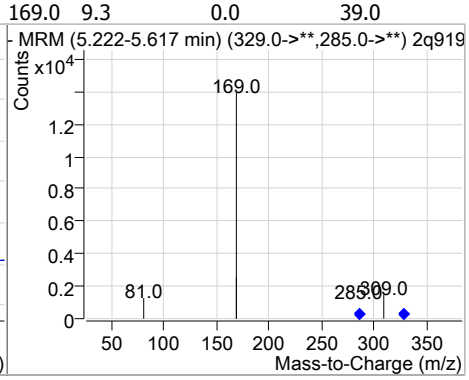


Perfluorinated Compounds by LC/MS/MS

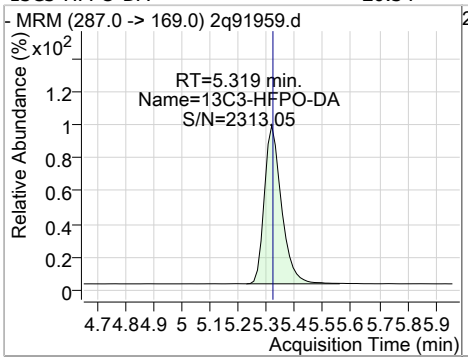
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.04	5.31	0.00	9614	285.0 -> 169.0	9.3	0.0	39.0

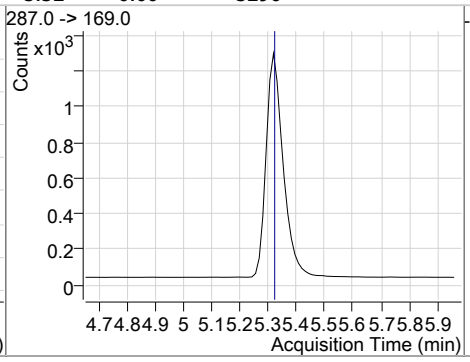


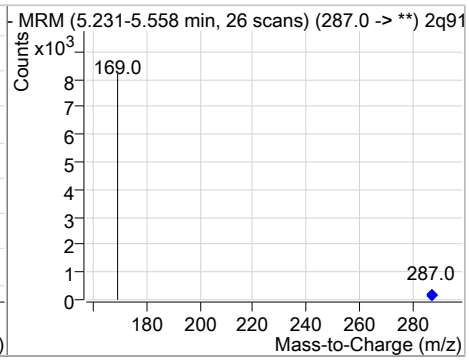




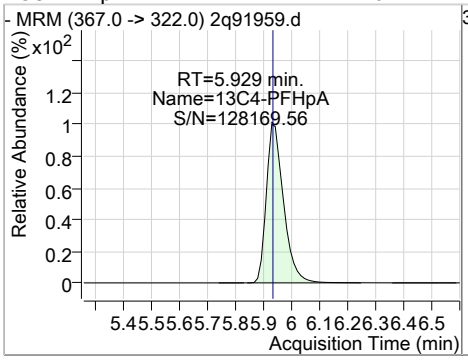
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.34	5.32	0.00	5296				

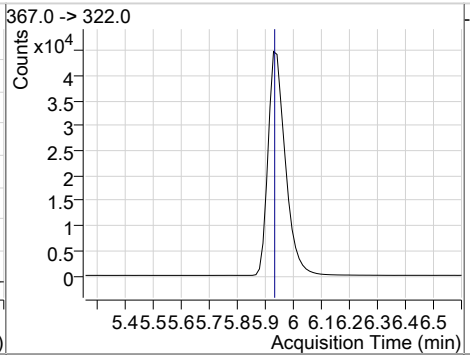


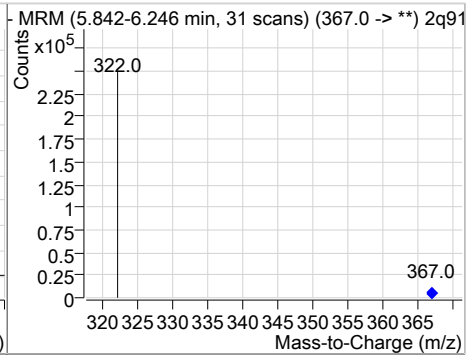




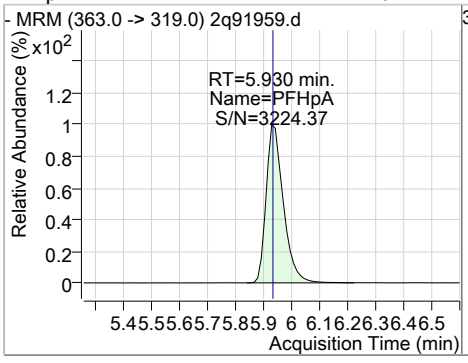
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.77	5.93	0.00	192840				

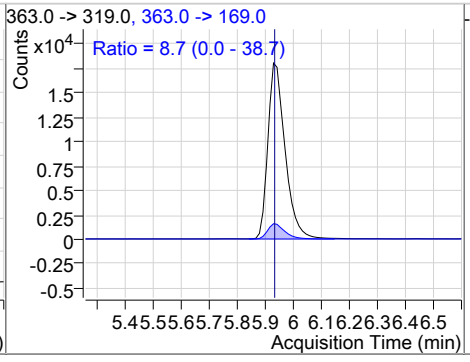


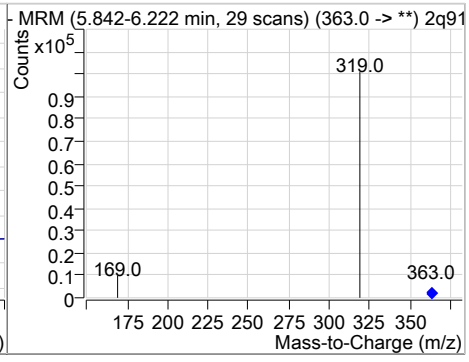




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	4.87	5.93	0.00	76772	363.0 -> 169.0	8.7	0.0	38.7

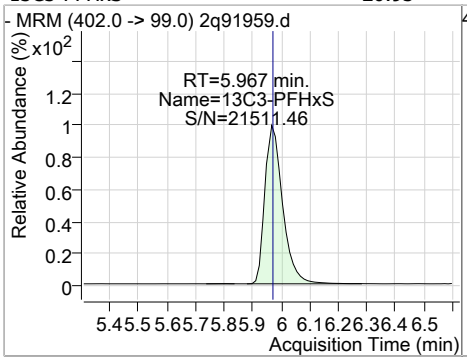


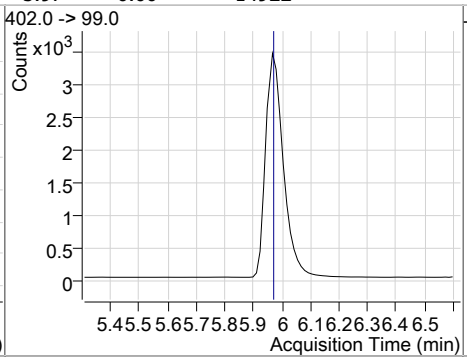


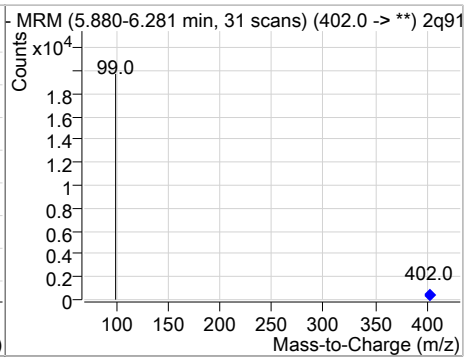


Perfluorinated Compounds by LC/MS/MS

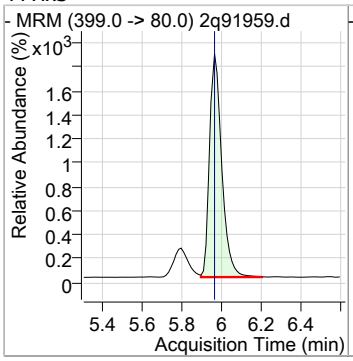
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.93	5.97	0.00	14922				

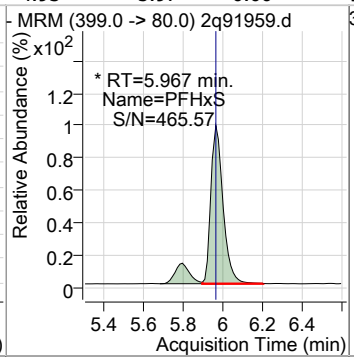


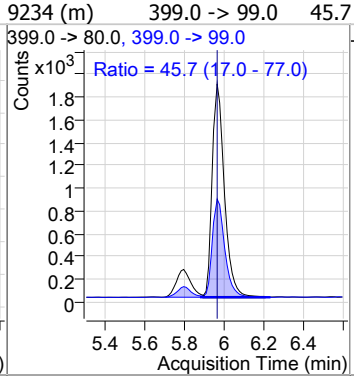


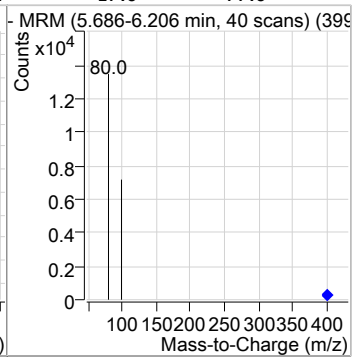


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.93	5.97	0.00	9234 (m)	399.0 -> 99.0	45.7	17.0	77.0

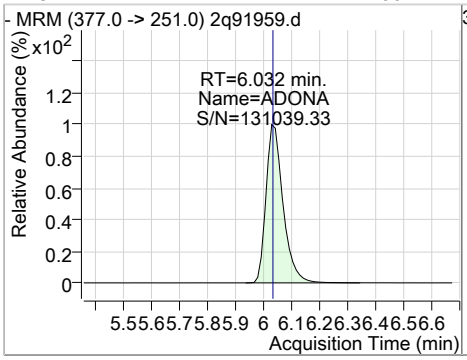


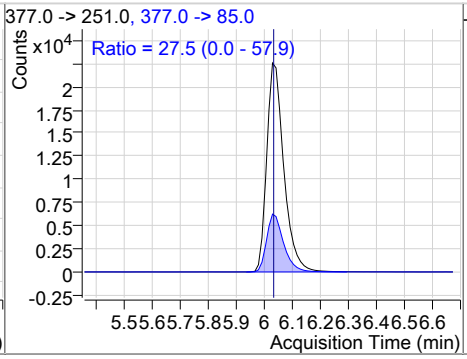


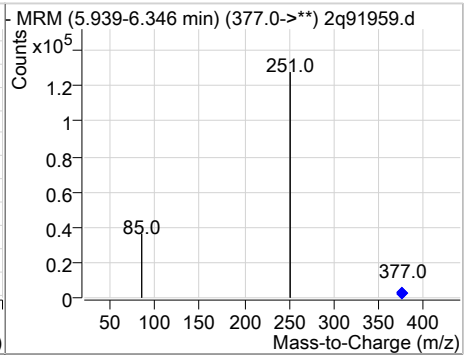




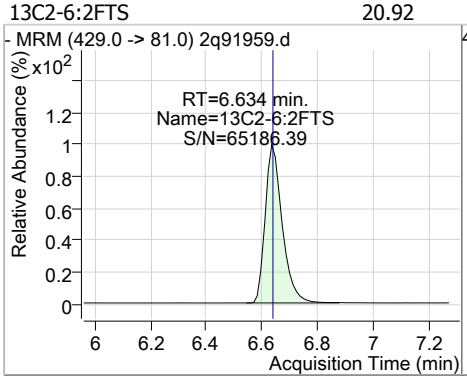
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.66	6.03	0.00	95251	377.0 -> 85.0	27.5	0.0	57.9

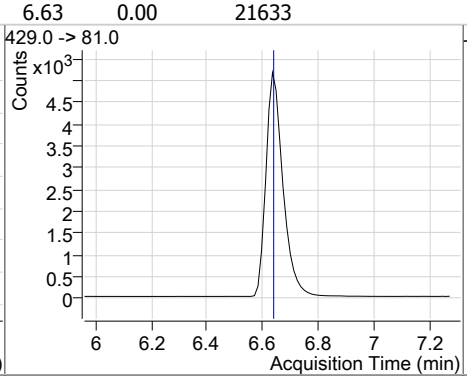


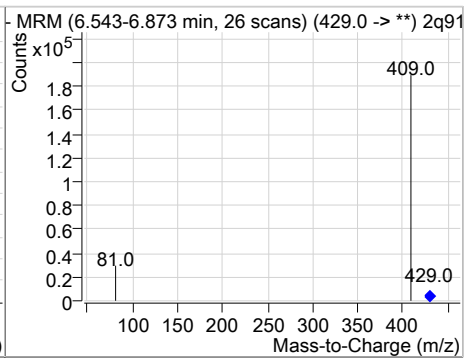




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.92	6.63	0.00	21633				

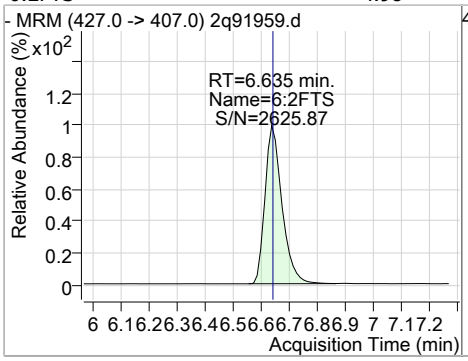


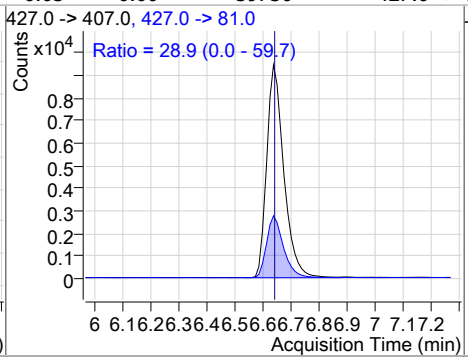


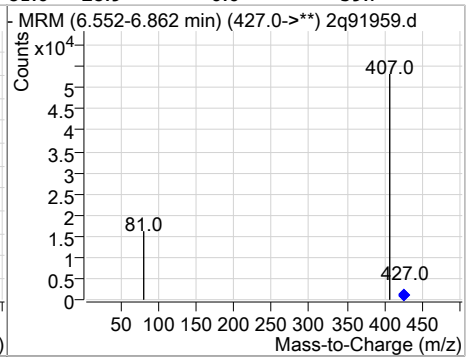


Perfluorinated Compounds by LC/MS/MS

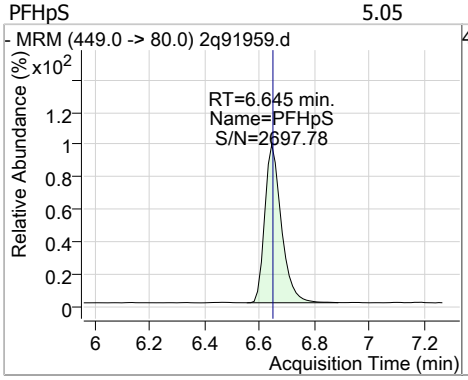
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	4.98	6.63	0.00	39730	427.0 -> 81.0	28.9	0.0	59.7

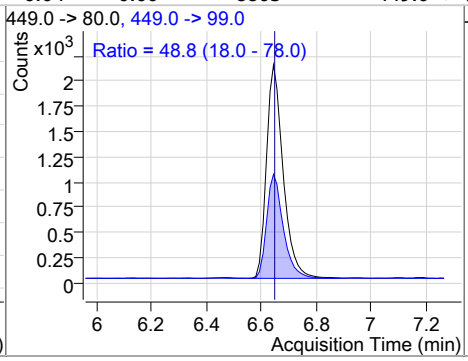


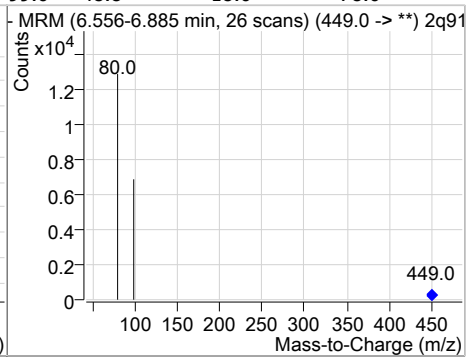




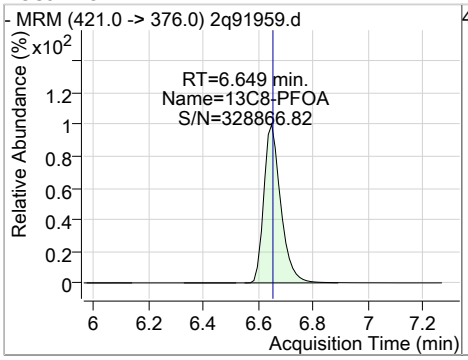
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	5.05	6.64	0.00	8863	449.0 -> 99.0	48.8	18.0	78.0

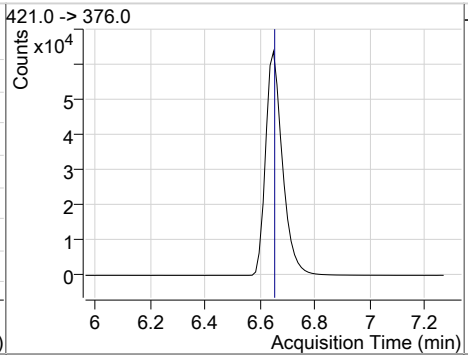


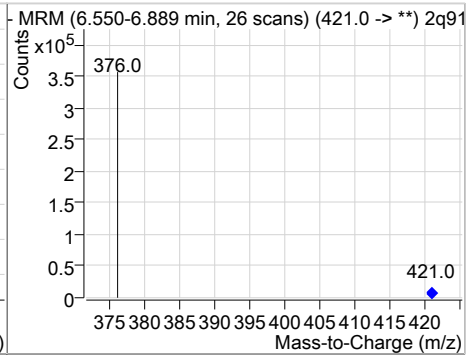




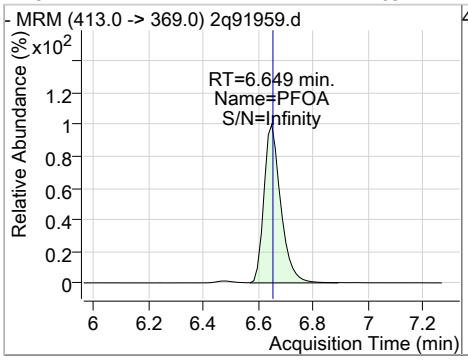
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.12	6.65	0.00	271959				

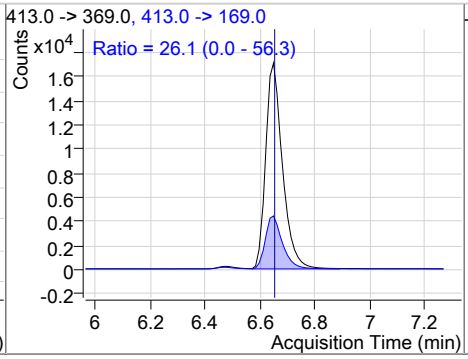


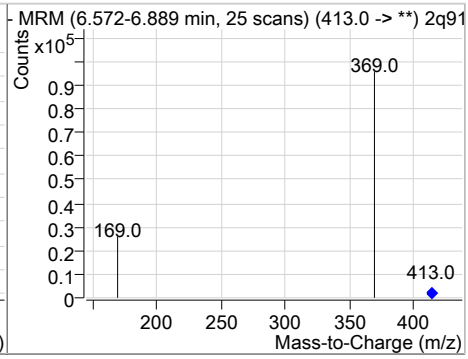




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	4.89	6.65	0.00	72247	413.0 -> 169.0	26.1	0.0	56.3

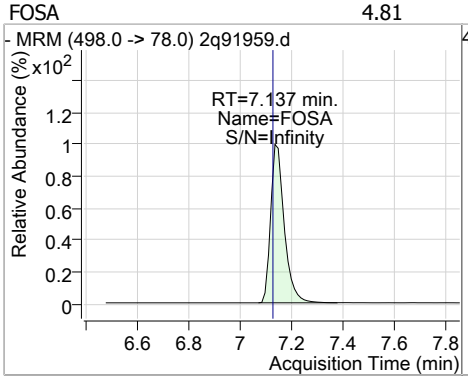


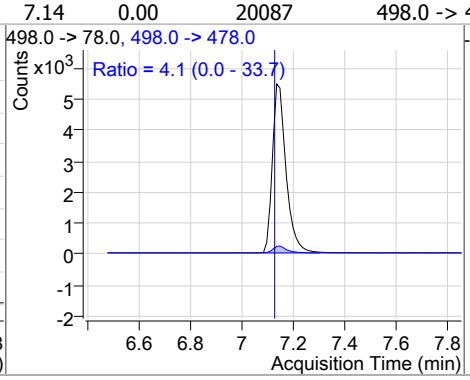


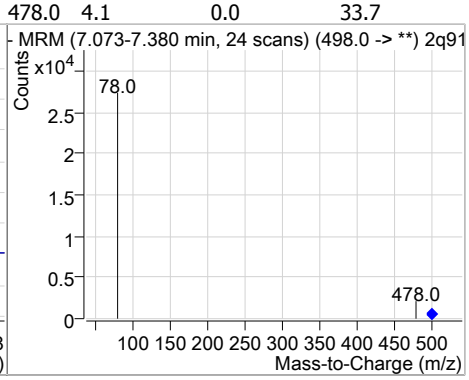


Perfluorinated Compounds by LC/MS/MS

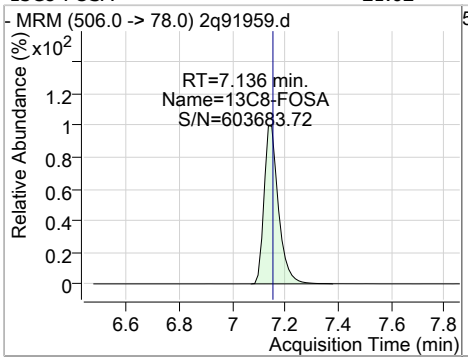
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	4.81	7.14	0.00	20087	498.0 -> 478.0	4.1	0.0	33.7

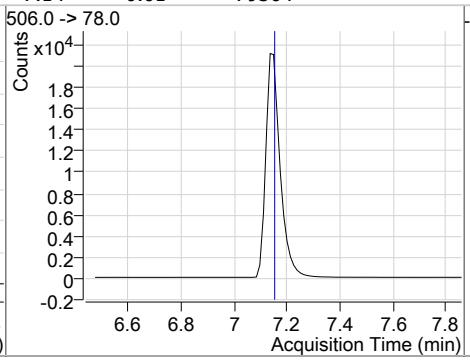


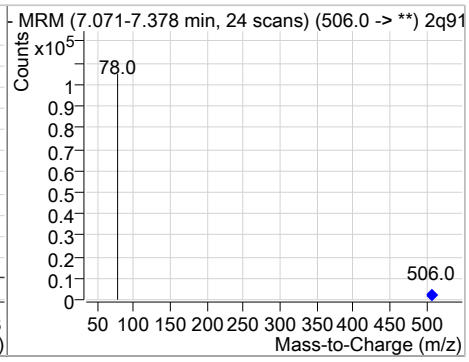




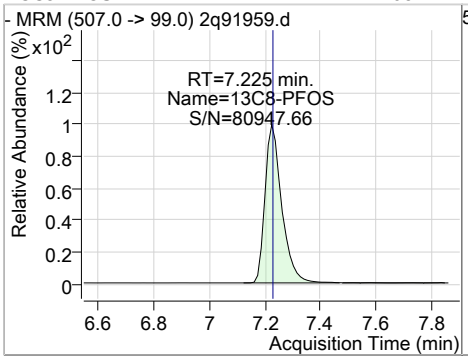
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.62	7.14	-0.01	79564				

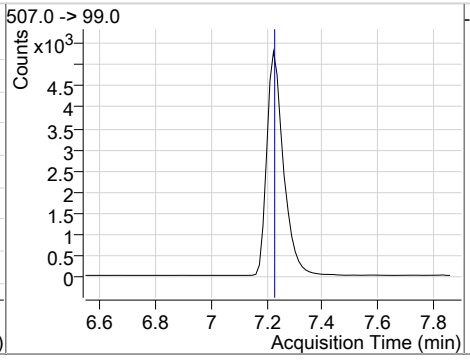


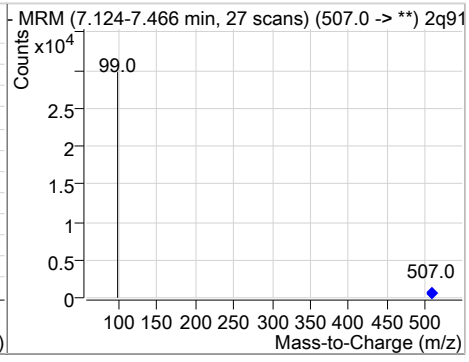




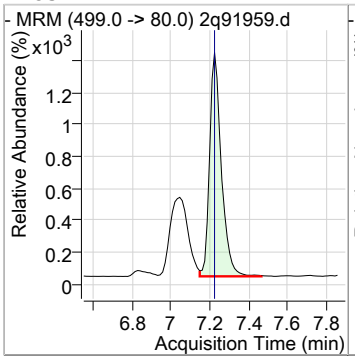
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.08	7.22	0.00	21875				

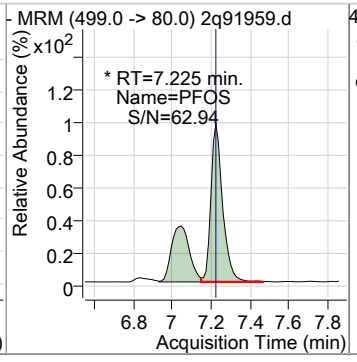


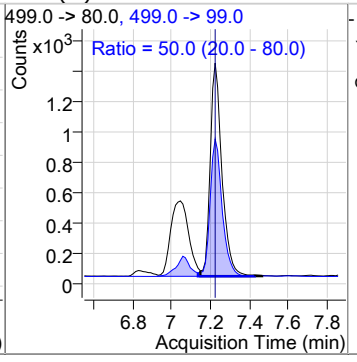


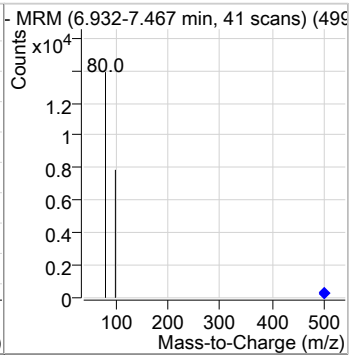


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.76	7.23	0.00	9112 (m)	499.0 -> 99.0	50.0	20.0	80.0



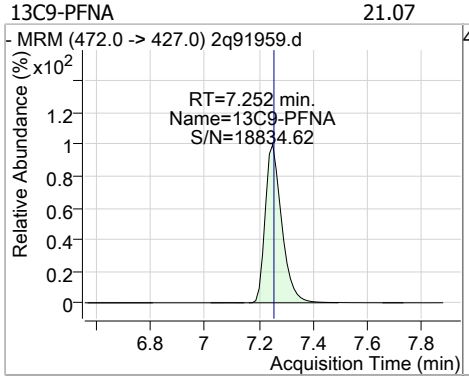


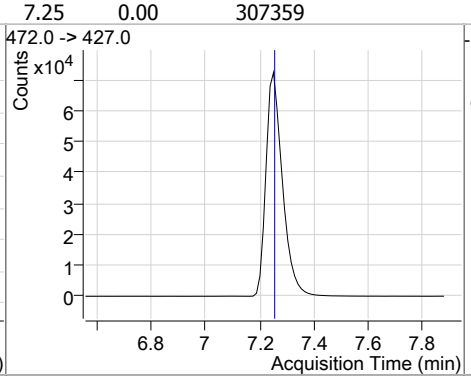


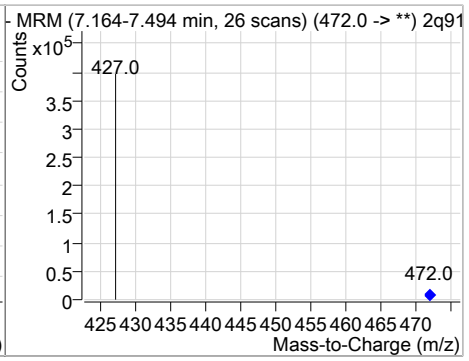


Perfluorinated Compounds by LC/MS/MS

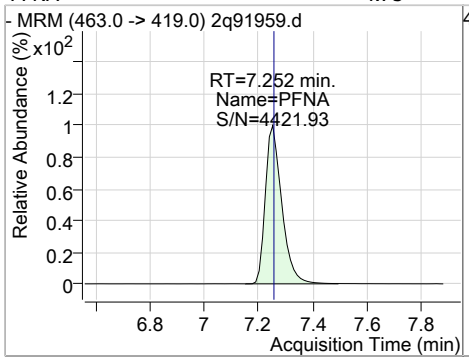
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.07	7.25	0.00	307359				

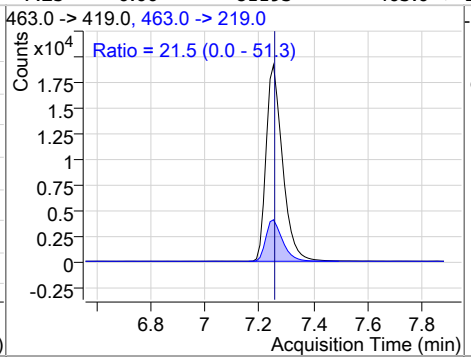


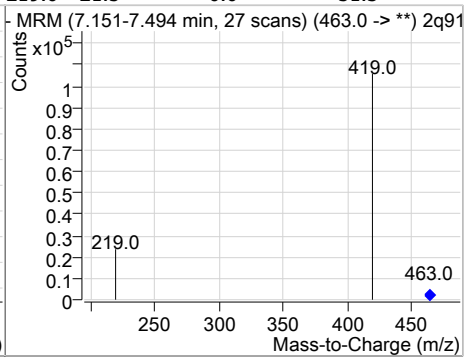




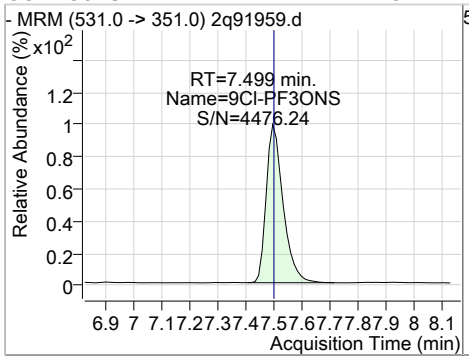
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.75	7.25	0.00	81193	463.0 -> 219.0	21.5	0.0	51.3

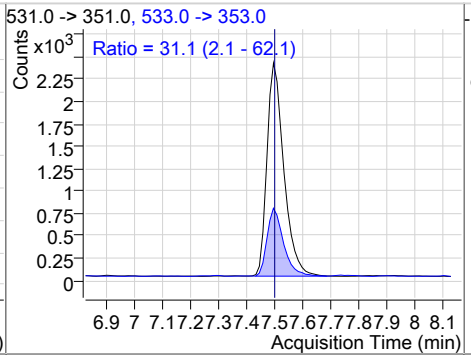


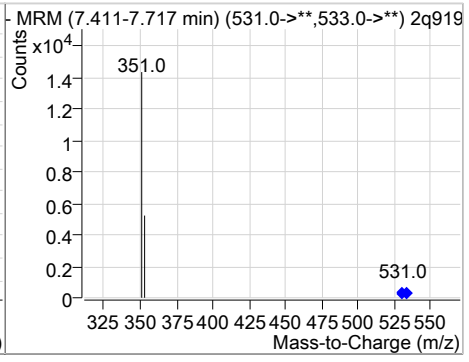




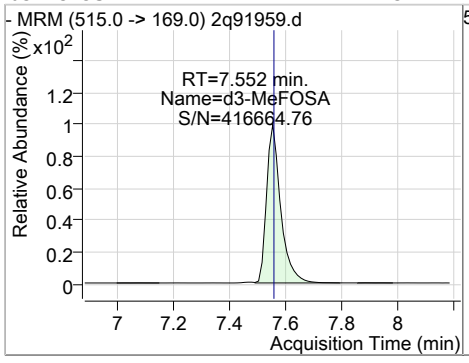
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.79	7.50	0.00	9973	533.0 -> 353.0	31.1	2.1	62.1

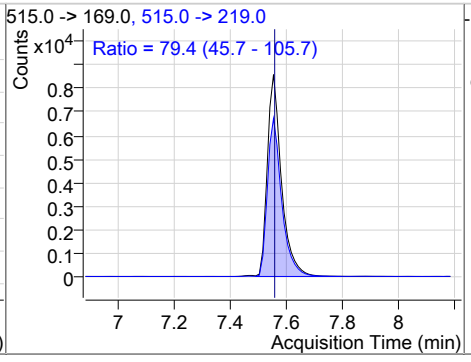


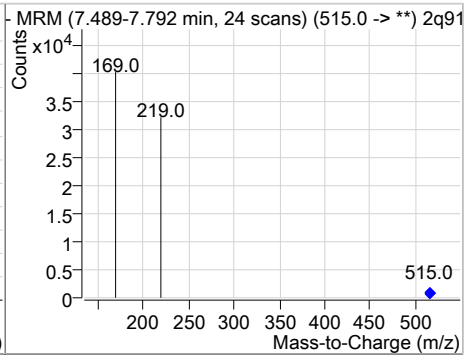




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	21.37	7.55	0.00	29912	515.0 -> 219.0	79.4	45.7	105.7

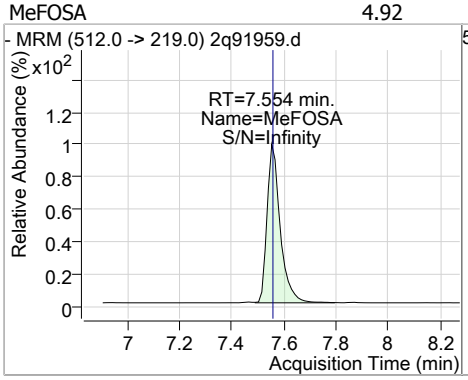


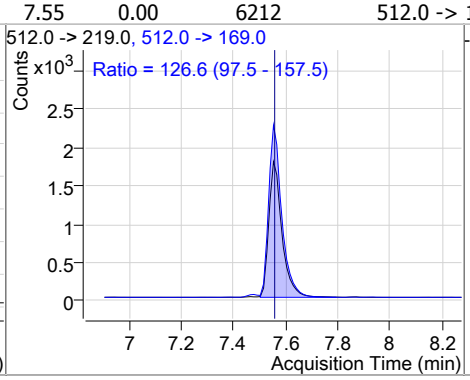


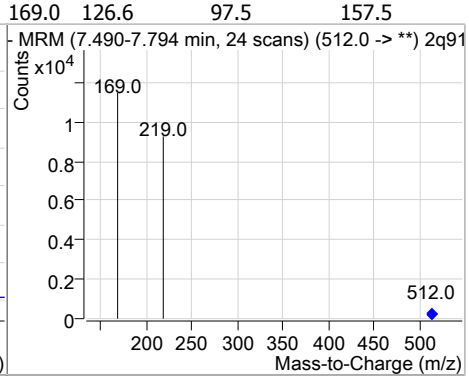


Perfluorinated Compounds by LC/MS/MS

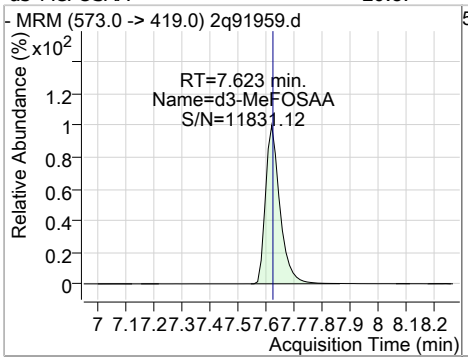
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.92	7.55	0.00	6212	512.0 -> 169.0	126.6	97.5	157.5

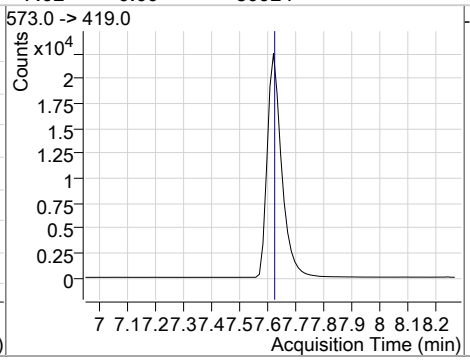


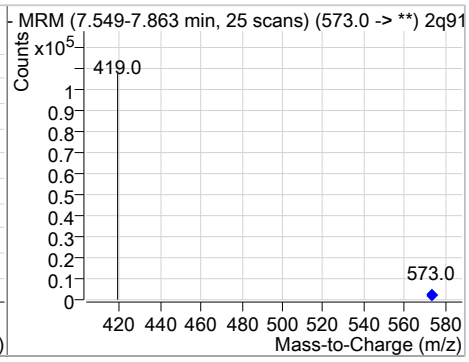




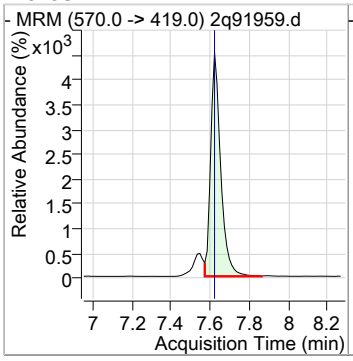
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.87	7.62	0.00	80024				

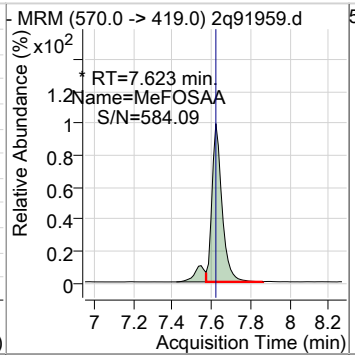


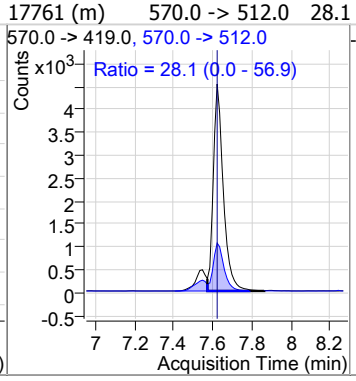


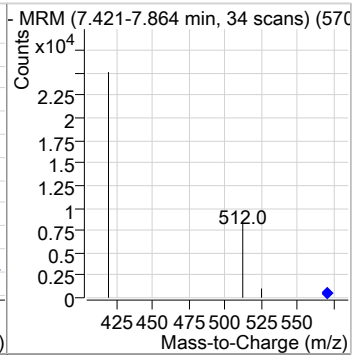


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	4.83	7.62	0.00	17761 (m)	570.0 -> 512.0	28.1	0.0	56.9

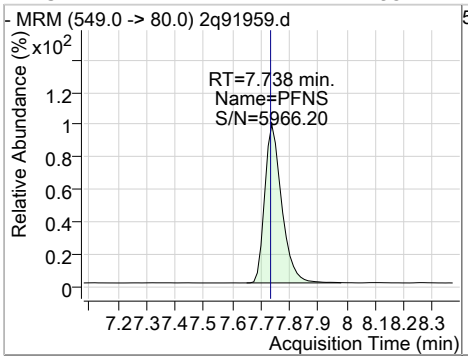


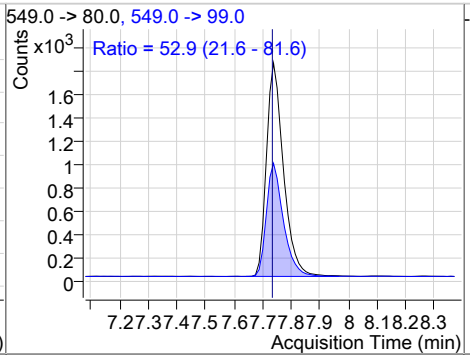


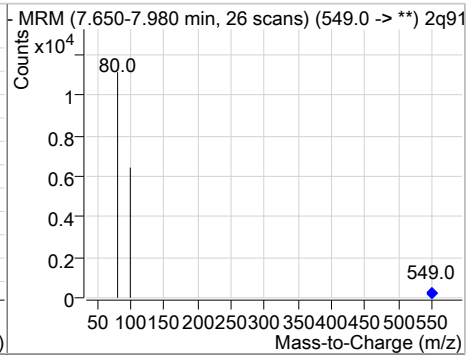




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	4.93	7.74	0.00	7590	549.0 -> 99.0	52.9	21.6	81.6

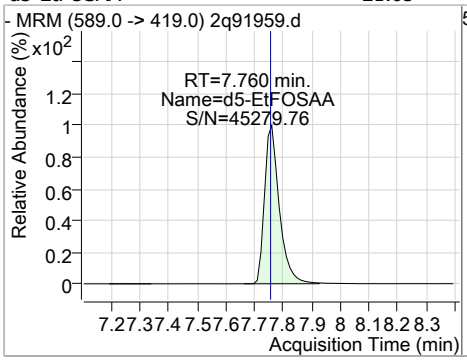


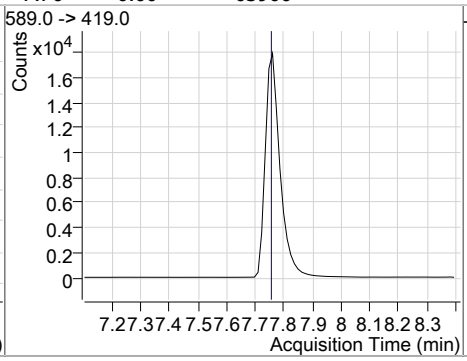


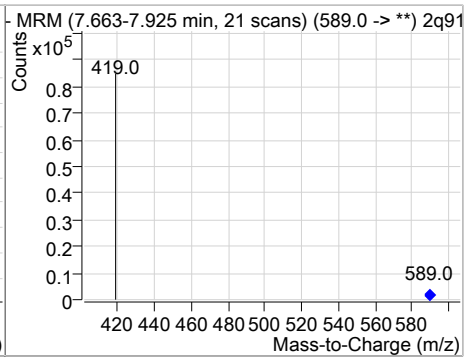


Perfluorinated Compounds by LC/MS/MS

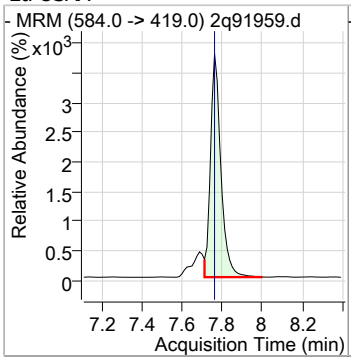
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	21.05	7.76	0.00	63906				

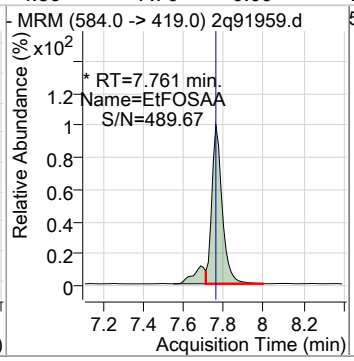


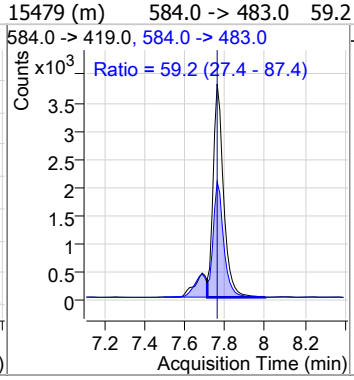


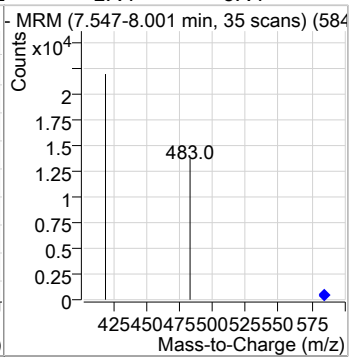


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.86	7.76	0.00	15479 (m)	584.0 -> 483.0	59.2	27.4	87.4

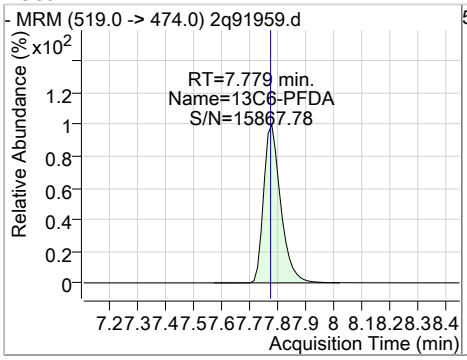


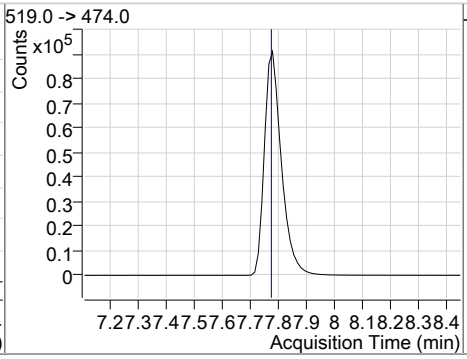


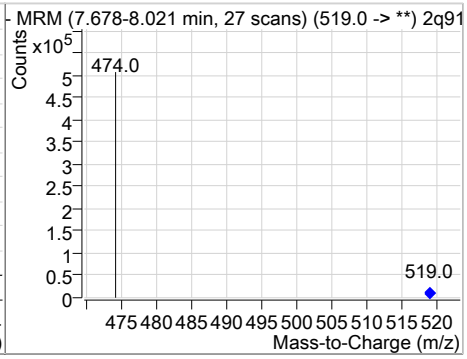




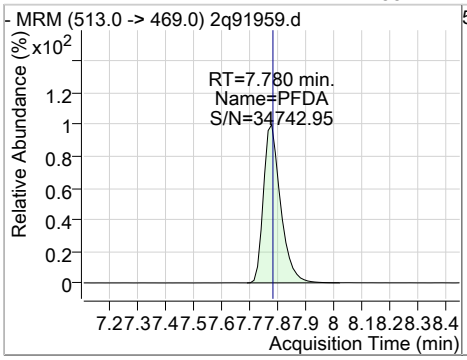
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.11	7.78	0.00	384514				

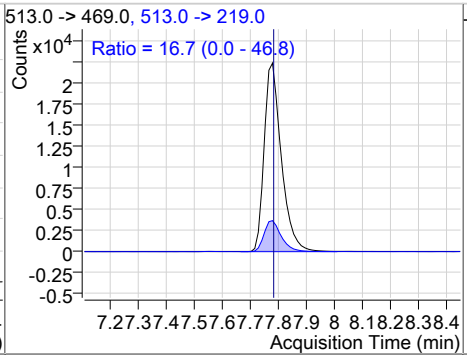


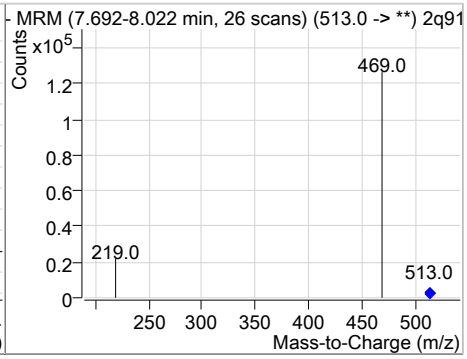




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	4.88	7.78	0.00	95025	513.0 -> 219.0	16.7	0.0	46.8

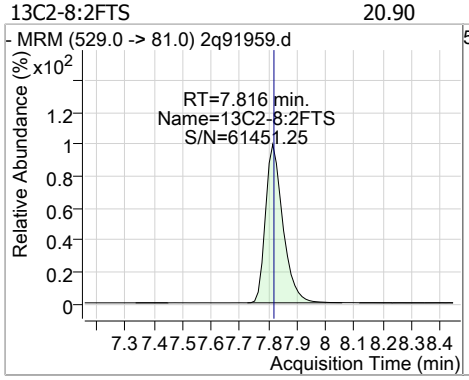


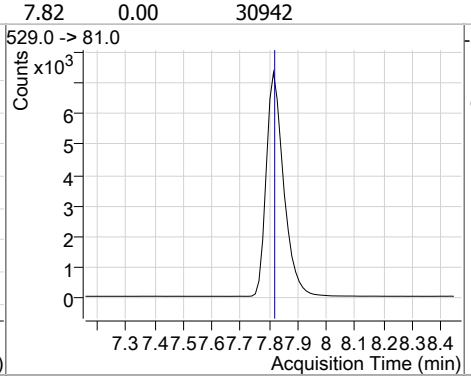


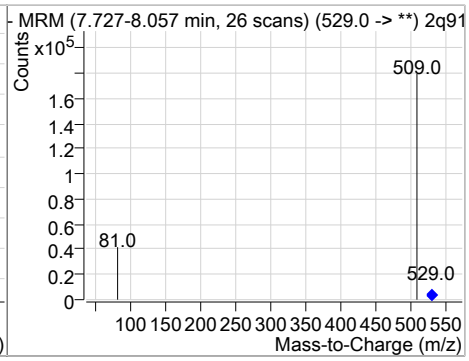


Perfluorinated Compounds by LC/MS/MS

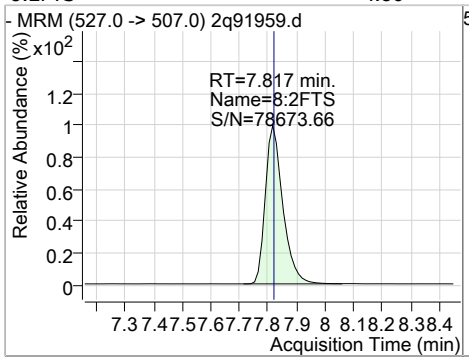
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.90	7.82	0.00	30942				

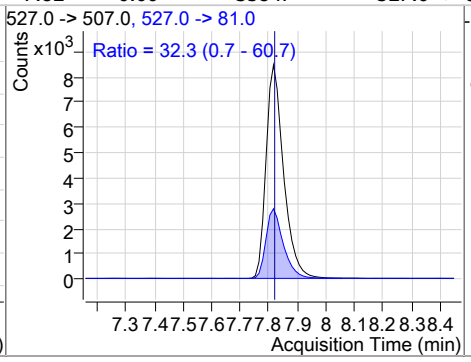


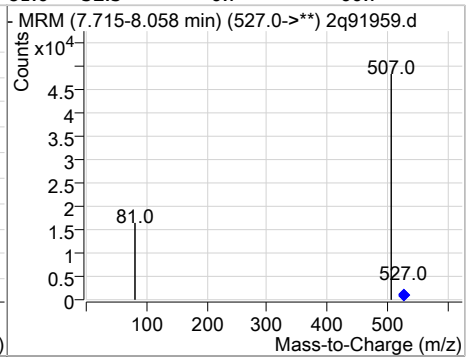




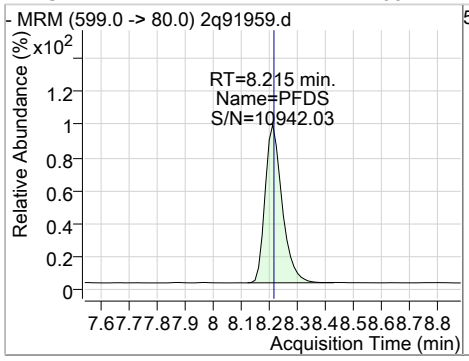
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	4.86	7.82	0.00	35847	527.0 -> 81.0	32.3	0.7	60.7

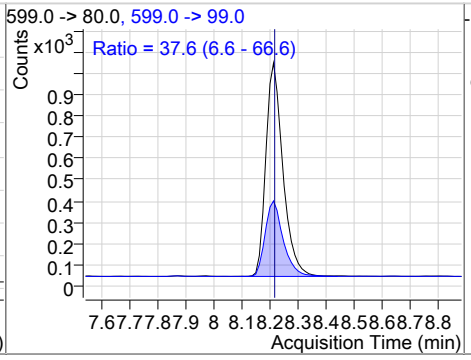


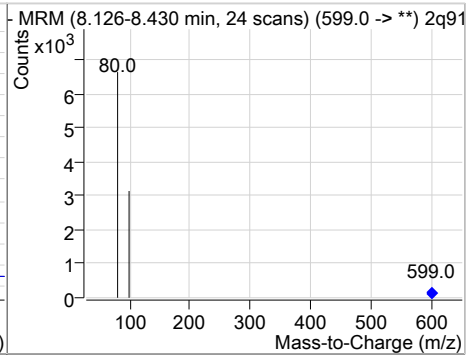




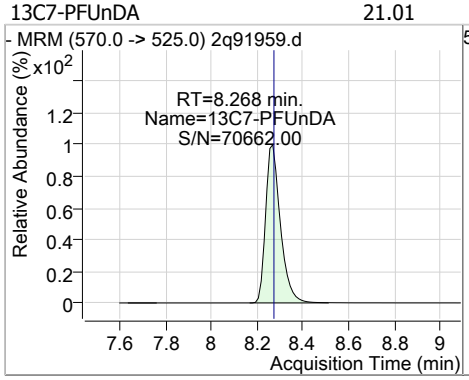
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	4.88	8.22	0.00	4232	599.0 -> 99.0	37.6	6.6	66.6

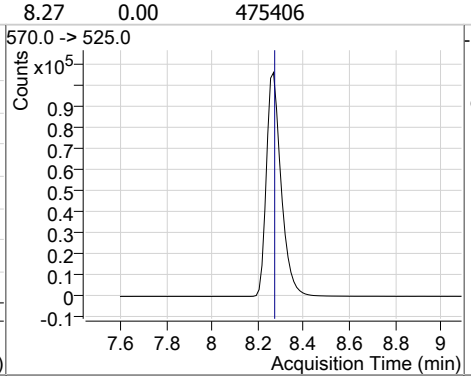


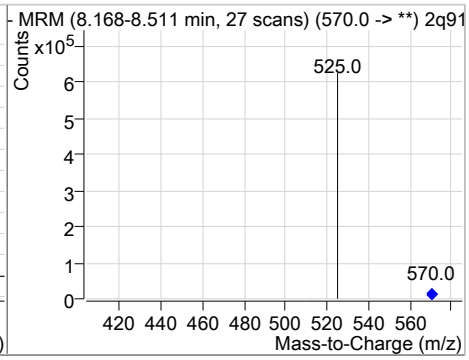




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.01	8.27	0.00	475406				

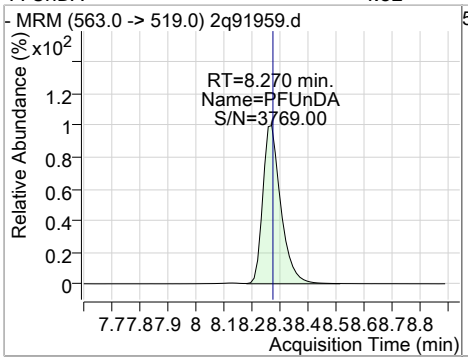


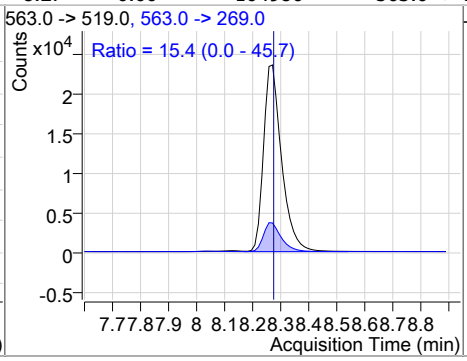


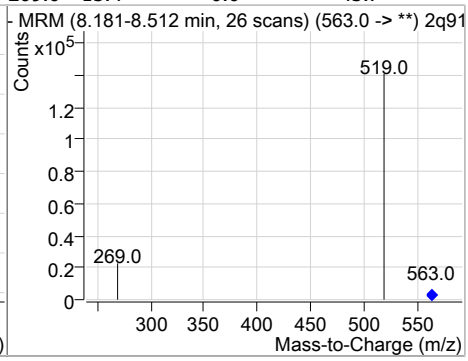


Perfluorinated Compounds by LC/MS/MS

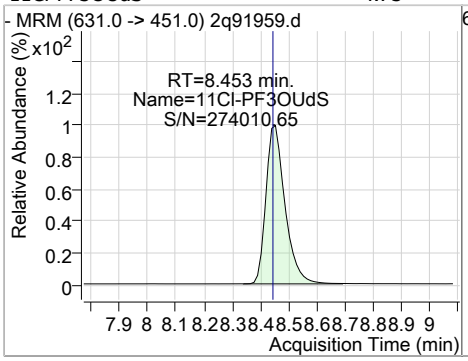
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	4.82	8.27	0.00	104986	563.0 -> 269.0	15.4	0.0	45.7

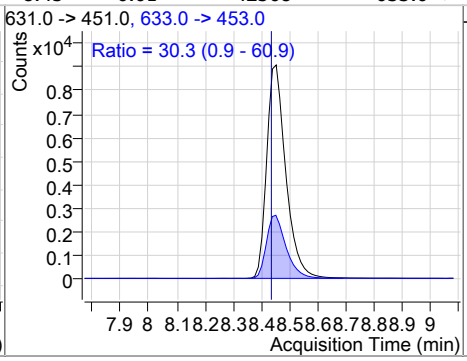


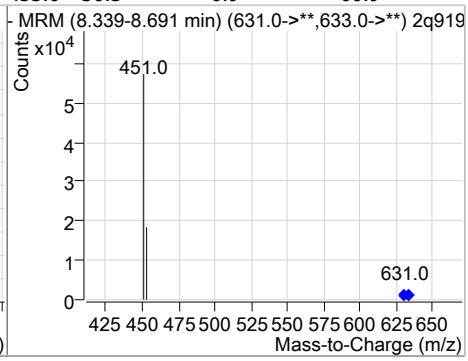




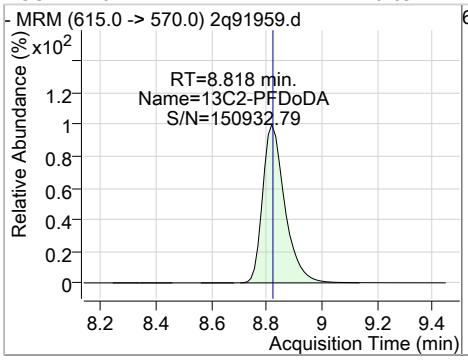
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.73	8.45	0.01	42568	633.0 -> 453.0	30.3	0.9	60.9

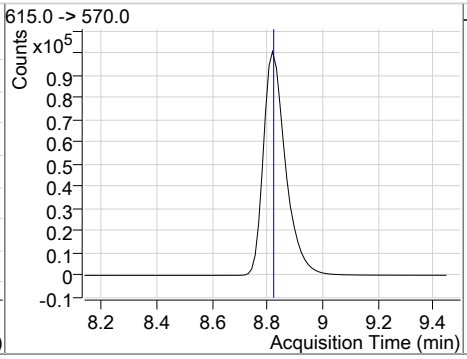


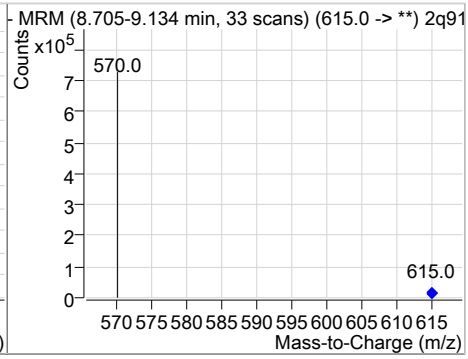




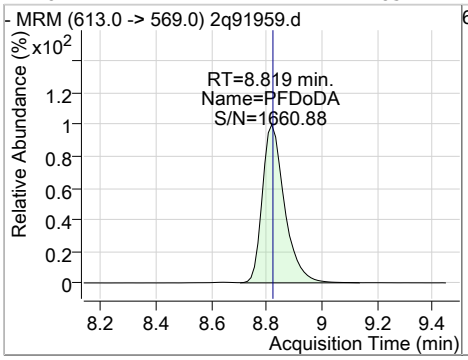
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.69	8.82	0.00	558762				

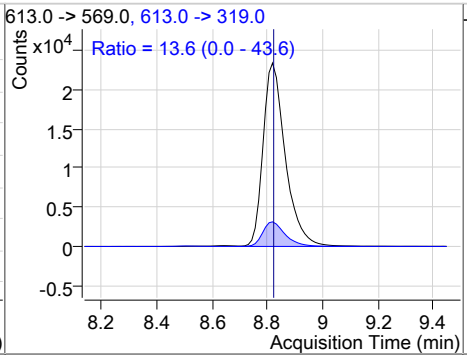


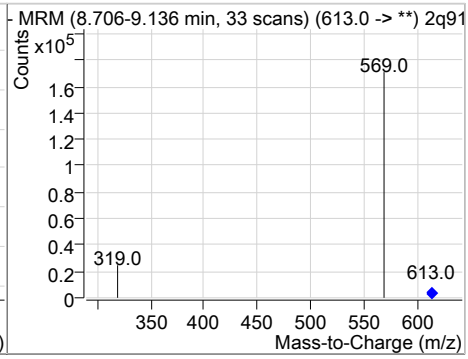




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	4.85	8.82	0.00	129940	613.0 -> 319.0	13.6	0.0	43.6

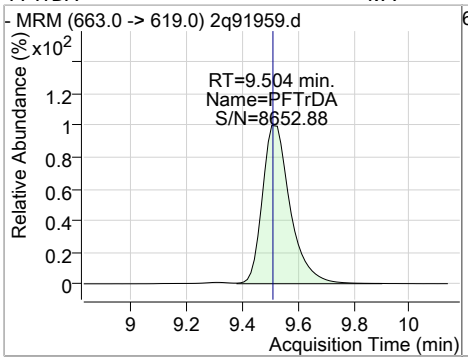


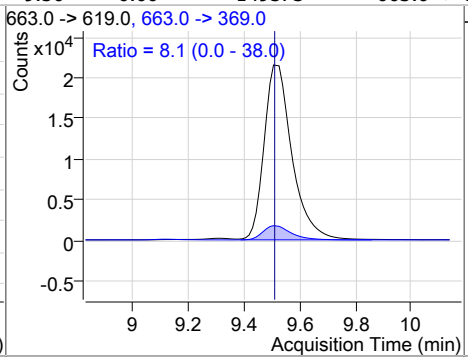


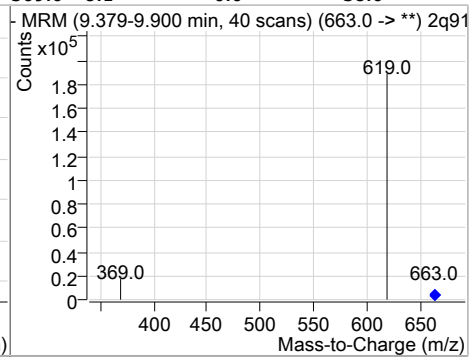


Perfluorinated Compounds by LC/MS/MS

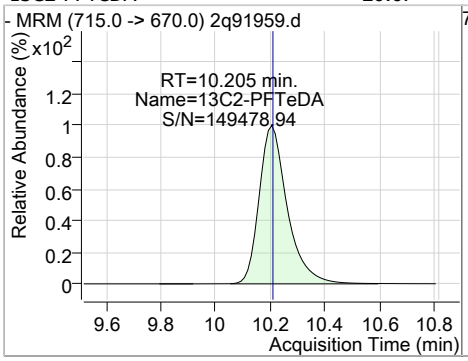
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	4.77	9.50	0.00	149573	663.0 -> 369.0	8.1	0.0	38.0

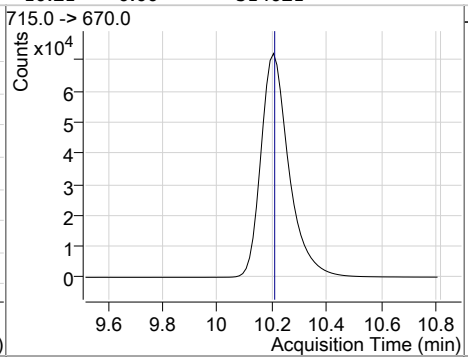


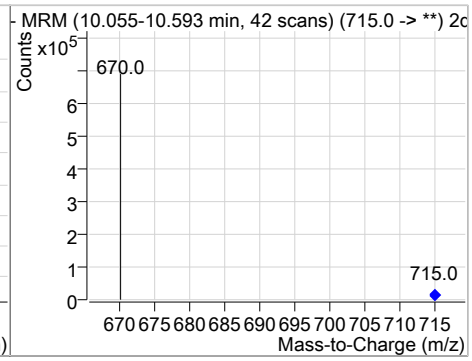




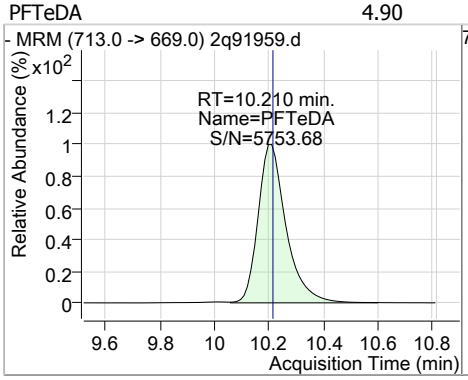
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.67	10.21	0.00	514621				

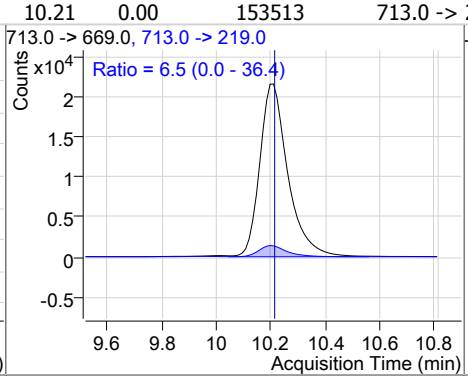


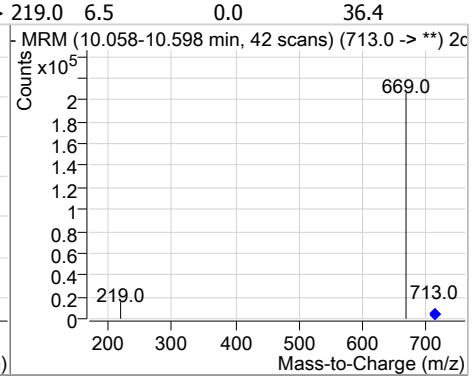




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	4.90	10.21	0.00	153513	713.0 -> 219.0	6.5	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91959.D
Injection Time: 05/27/22 13:00
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91960.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 1:19:45 PM
Sample Name : ic1287-10
Vial : P1-A6
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

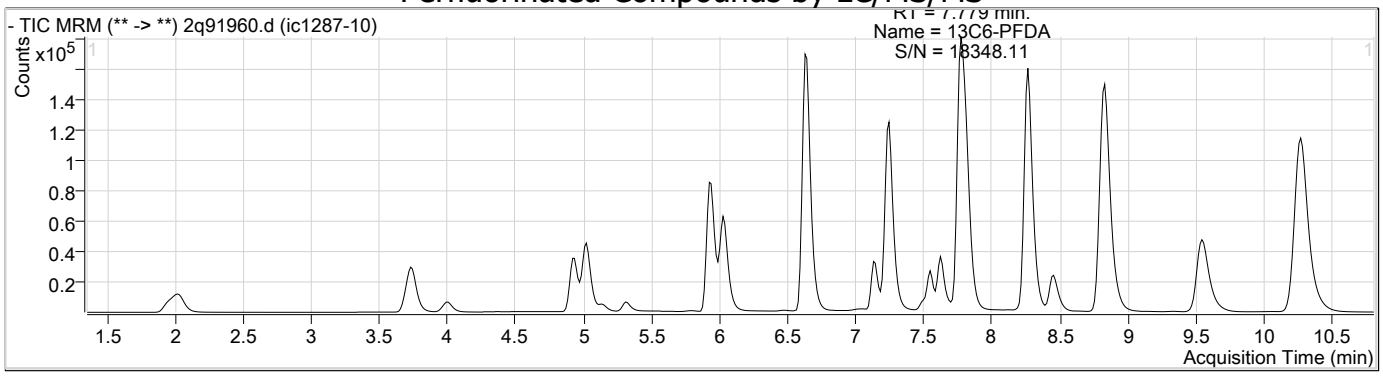
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	63671	20.00	µg/L	0.000
M4-PFBA	2.014	217.0 -> 172.0	79013	20.00	µg/L	0.000
M5-PFPeA	3.736	268.0 -> 223.0	92841	20.00	µg/L	0.000
M5-PFHxA	5.027	318.0 -> 273.0	137532	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	190985	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	266770	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	299682	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	369271	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	459663	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	553520	20.00	µg/L	0.014
M2-PFTeDA	10.268	715.0 -> 670.0	511321	20.00	µg/L	0.063
M8-FOSA	7.136	506.0 -> 78.0	77125	20.00	µg/L	-0.013
M3-PFBS	4.004	302.0 -> 99.0	10498	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	14480	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	21557	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	9527	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	21432	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	30417	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	78427	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	5368	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	28834	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	9527	20.48	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.4%		
13C2-6:2FTS	6.634	429.0 -> 81.0	21432	20.72	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%		
13C2-8:2FTS	7.816	529.0 -> 81.0	30417	20.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C2-PFDoDA	8.832	615.0 -> 570.0	553520	20.49	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%		
13C2-PFTeDA	10.268	715.0 -> 670.0	511321	20.54	µg/L	0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C3-PFBS	4.004	302.0 -> 99.0	10498	20.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C3-PFHxS	5.967	402.0 -> 99.0	14480	20.31	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C4-PFBA	2.014	217.0 -> 172.0	79013	20.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
13C4-PFHpA	5.929	367.0 -> 322.0	190985	20.57	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
d5-EtFOSAA	7.760	589.0 -> 419.0	63671	20.98	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C5-PFHxA	5.027	318.0 -> 273.0	137532	20.37	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C5-PFPeA	3.736	268.0 -> 223.0	92841	20.37	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

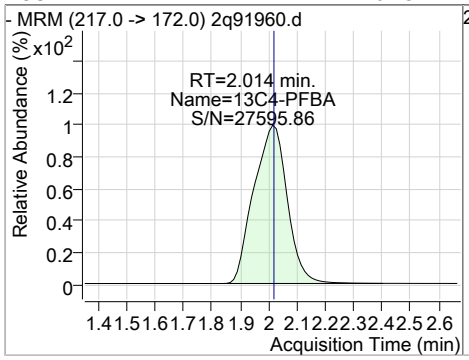
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%			
13C6-PFDA	7.779	519.0 -> 474.0	369271	20.27	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%			
13C7-PFUnDA	8.269	570.0 -> 525.0	459663	20.31	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%			
13C8-FOSA	7.136	506.0 -> 78.0	77125	20.96	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.8%			
13C8-PFOA	6.649	421.0 -> 376.0	266770	20.72	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%			
13C8-PFOS	7.225	507.0 -> 99.0	21557	20.77	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%			
13C9-PFNA	7.252	472.0 -> 427.0	299682	20.55	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%			
d3-MeFOSAA	7.623	573.0 -> 419.0	78427	20.45	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	5368	20.61	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%			
d3-MeFOSA	7.552	515.0 -> 169.0	28834	20.60	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	48497	9.72	µg/L		100
6:2FTS	6.635	427.0 -> 407.0	75851	9.60	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	72191	9.96	µg/L		99
EtFOSAA	7.761	584.0 -> 419.0	29715	9.37	µg/L	m	100
FOSA	7.137	498.0 -> 78.0	39586	9.77	µg/L		99
MeFOSAA	7.623	570.0 -> 419.0	35471	9.85	µg/L	m	99
PFBA	2.021	213.0 -> 169.0	19704	9.73	µg/L		100
PFBS	3.994	299.0 -> 80.0	17057	9.75	µg/L		100
PFDA	7.780	513.0 -> 469.0	185071	9.89	µg/L		99
PFDoDA	8.833	613.0 -> 569.0	260240	9.80	µg/L		100
PFDS	8.215	599.0 -> 80.0	8309	9.91	µg/L		100
PFHpA	5.930	363.0 -> 319.0	151683	9.71	µg/L		99
PFHpS	6.645	449.0 -> 80.0	17207	10.11	µg/L		99
PFHxA	5.028	313.0 -> 269.0	49516	9.73	µg/L		99
PFHxS	5.967	399.0 -> 80.0	17762	9.77	µg/L	m	99
PFNA	7.252	463.0 -> 419.0	160475	9.63	µg/L		99
PFNS	7.738	549.0 -> 80.0	14135	9.31	µg/L		99
PFOA	6.649	413.0 -> 369.0	141024	9.73	µg/L		100
PFOS	7.225	499.0 -> 80.0	17609	9.33	µg/L	m	97
PFPeA	3.739	263.0 -> 219.0	70031	9.79	µg/L		100
PFPeS	5.132	349.0 -> 80.0	11792	9.85	µg/L		98
PFTeDA	10.272	713.0 -> 669.0	302886	9.73	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	305663	9.83	µg/L		100
PFUnDA	8.270	563.0 -> 519.0	204085	9.69	µg/L		99
11Cl-PF3OUdS	8.453	631.0 -> 451.0	83146	9.32	µg/L		99
9Cl-PF3ONS	7.499	531.0 -> 351.0	18768	9.38	µg/L		99
ADONA	6.032	377.0 -> 251.0	188013	9.38	µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	18987	9.81	µg/L		98
MeFOSA	7.554	512.0 -> 219.0	12274	10.09	µg/L		98

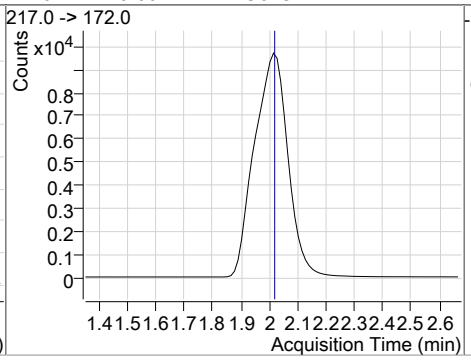
= Qualifier out of range, m = manually integrated, + = Area summed

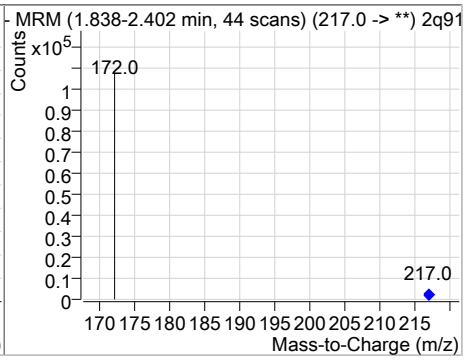
Perfluorinated Compounds by LC/MS/MS



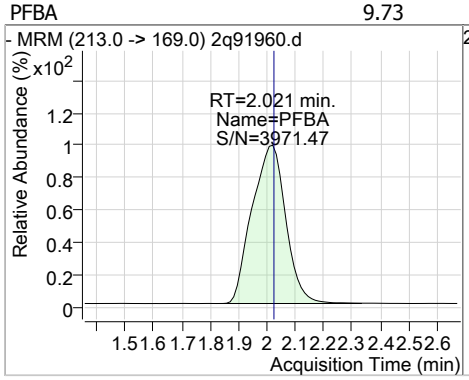
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.45	2.01	0.00	79013				

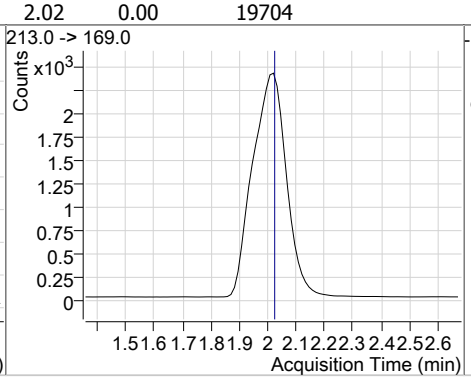


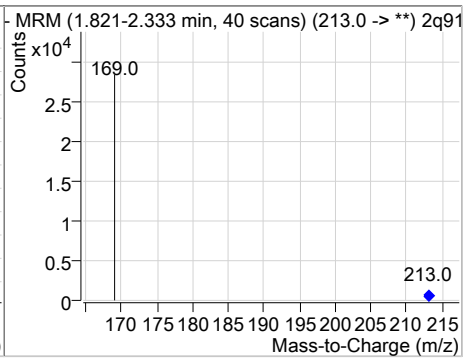




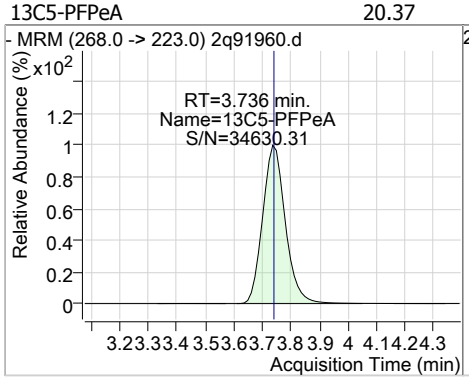
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	9.73	2.02	0.00	19704				

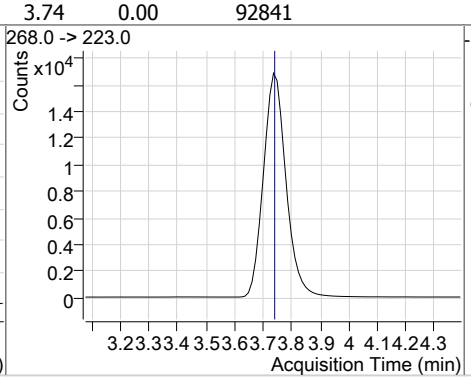


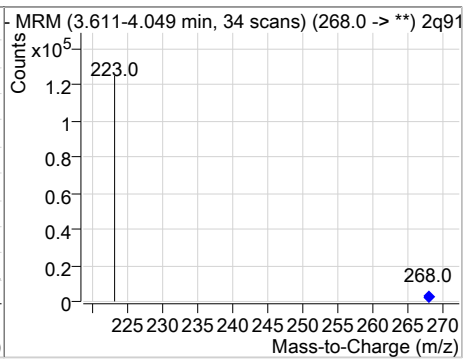




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.37	3.74	0.00	92841				

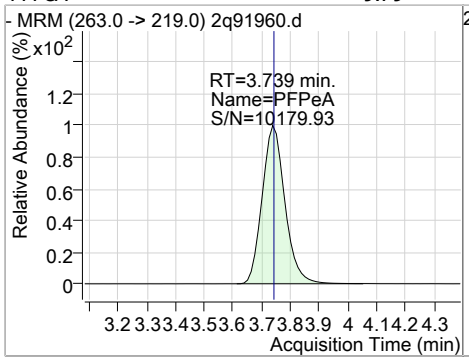


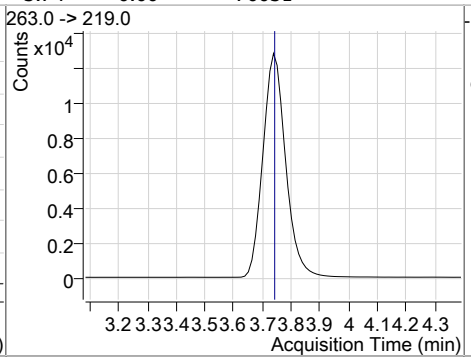


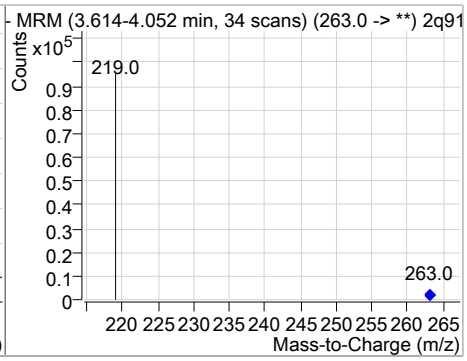


Perfluorinated Compounds by LC/MS/MS

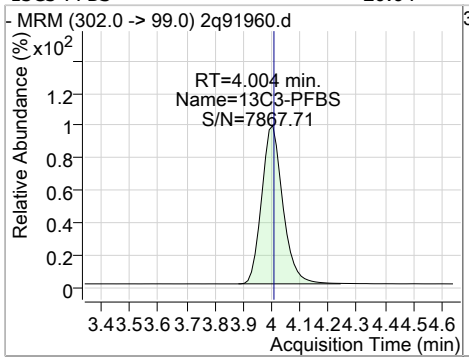
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.79	3.74	0.00	70031				

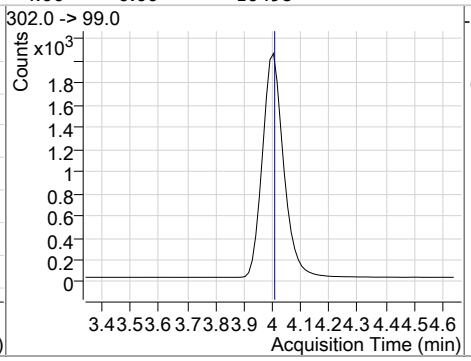


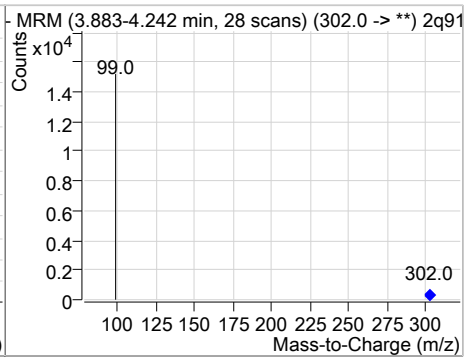




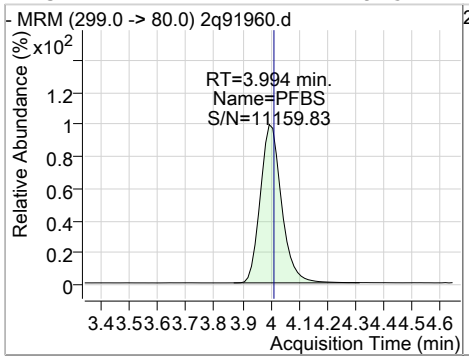
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.64	4.00	0.00	10498				

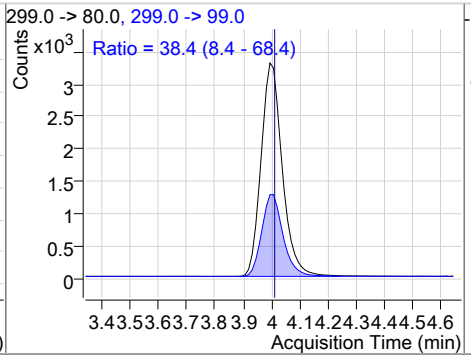


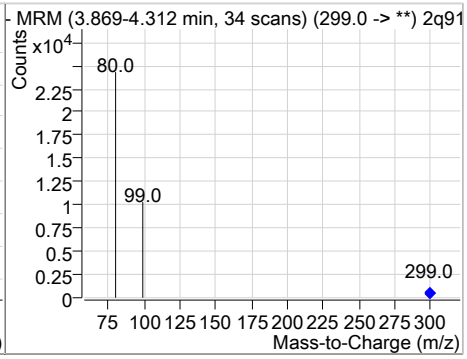




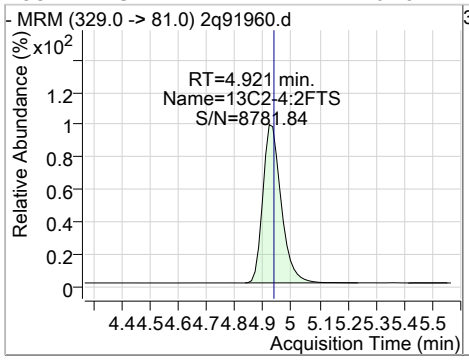
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	9.75	3.99	-0.01	17057	299.0 -> 99.0	38.4	8.4	68.4

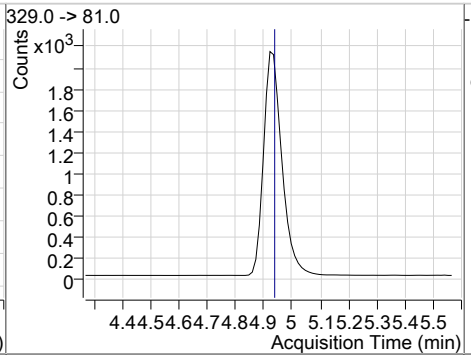


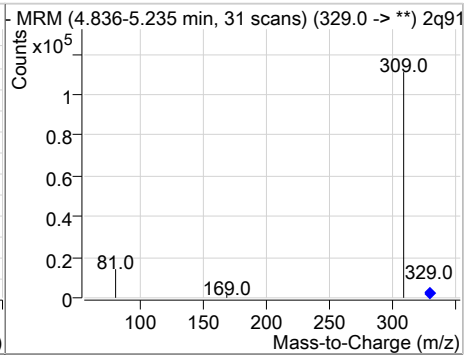




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.48	4.92	-0.01	9527				

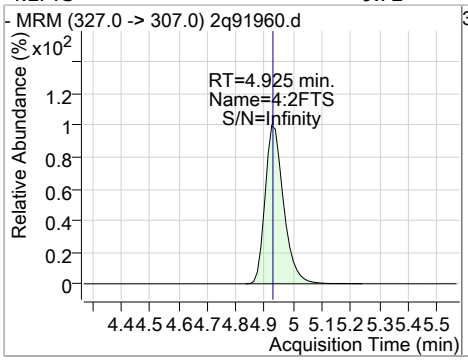


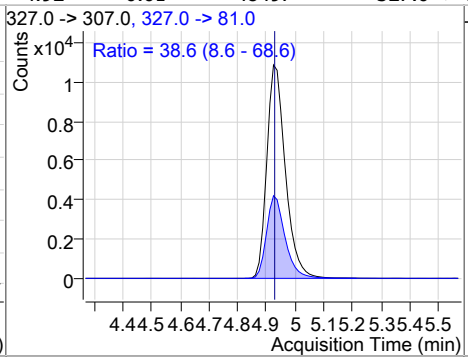


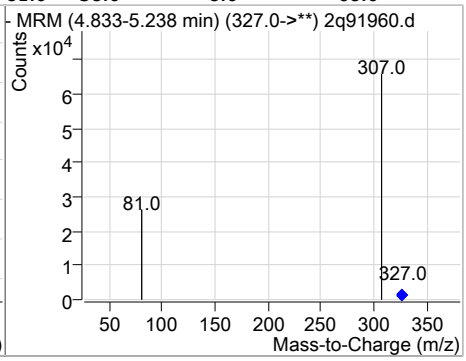


Perfluorinated Compounds by LC/MS/MS

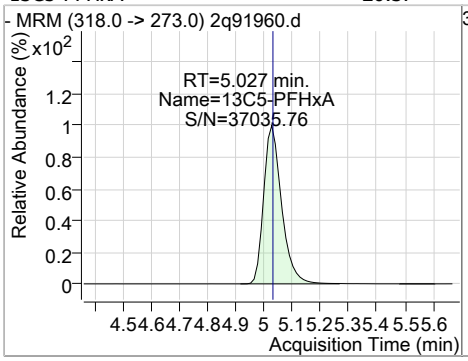
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	9.72	4.92	-0.01	48497	327.0 -> 81.0	38.6	8.6	68.6

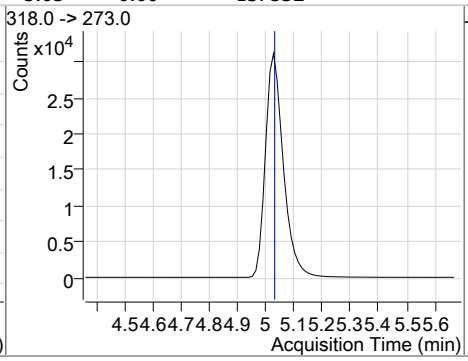


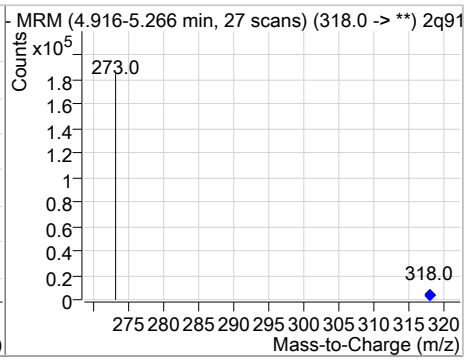




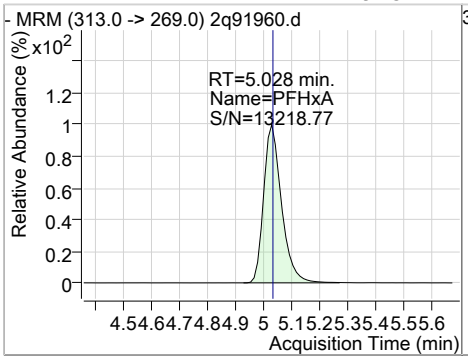
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.37	5.03	0.00	137532				

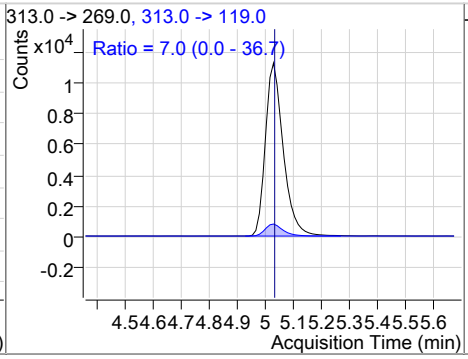


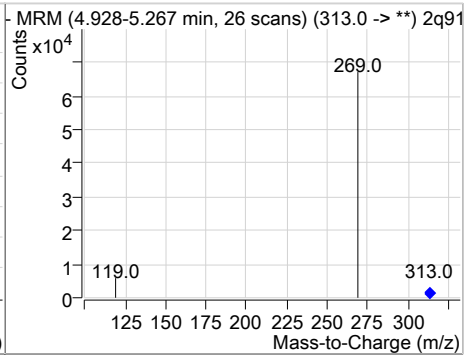




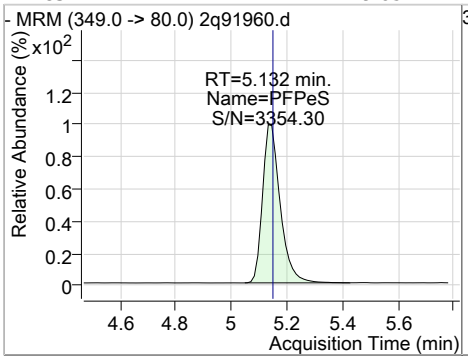
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	9.73	5.03	0.00	49516	313.0 -> 119.0	7.0	0.0	36.7

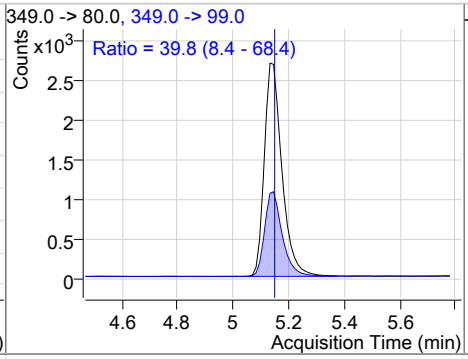


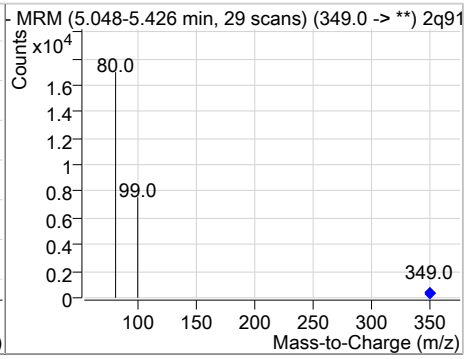




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	9.85	5.13	-0.01	11792	349.0 -> 99.0	39.8	8.4	68.4

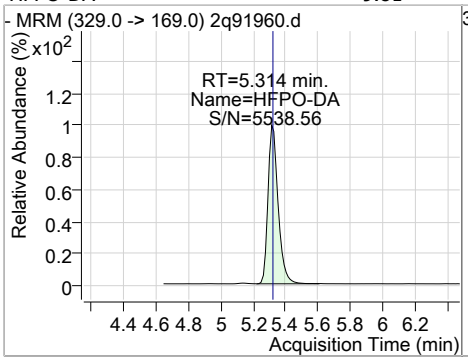


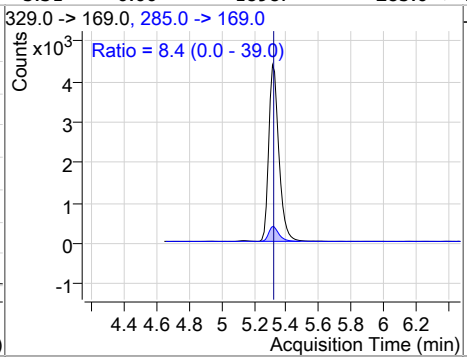


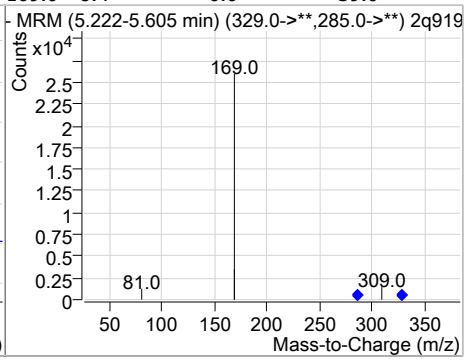


Perfluorinated Compounds by LC/MS/MS

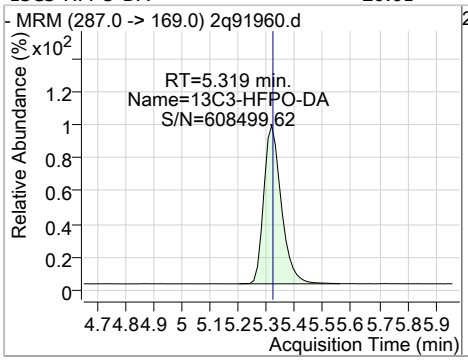
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.81	5.31	0.00	18987	285.0 -> 169.0	8.4	0.0	39.0

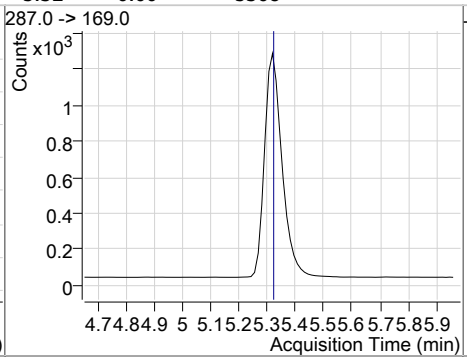


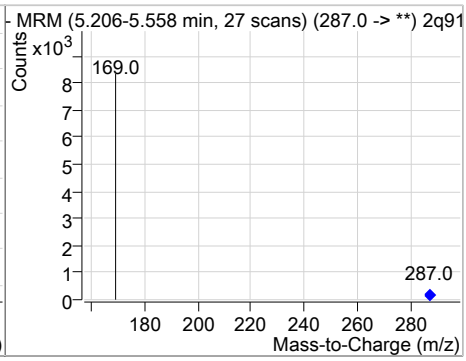




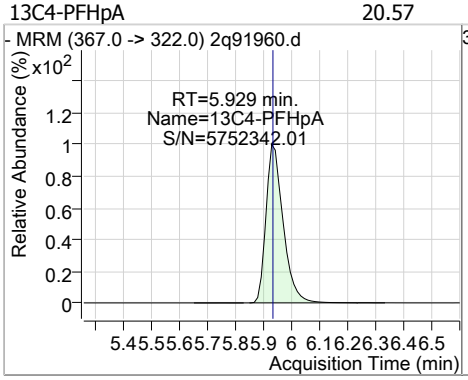
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.61	5.32	0.00	5368				

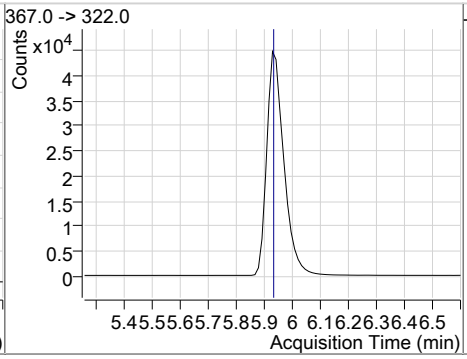


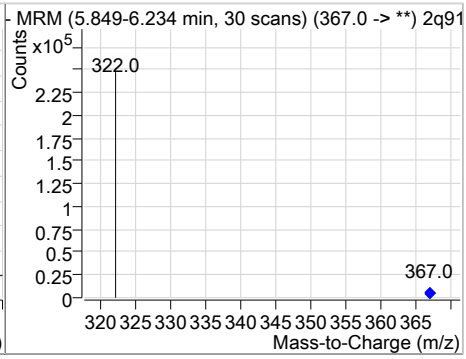




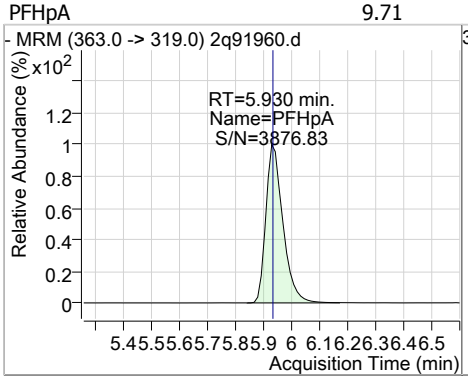
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.57	5.93	0.00	190985				

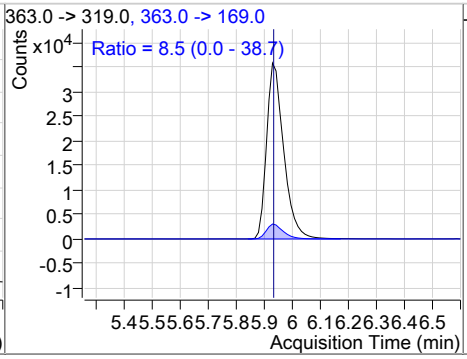


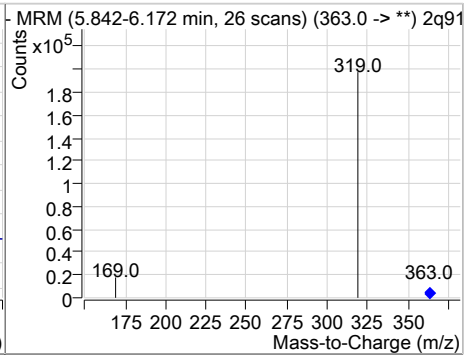




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	9.71	5.93	0.00	151683	363.0 -> 169.0	8.5	0.0	38.7

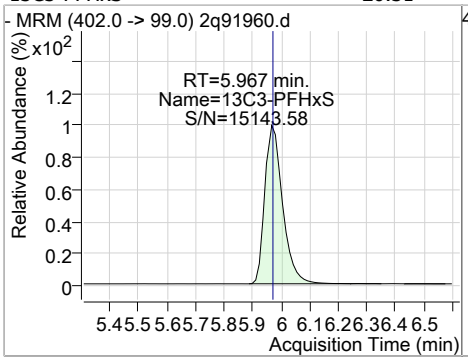


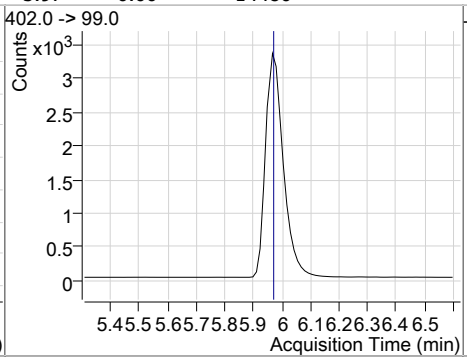


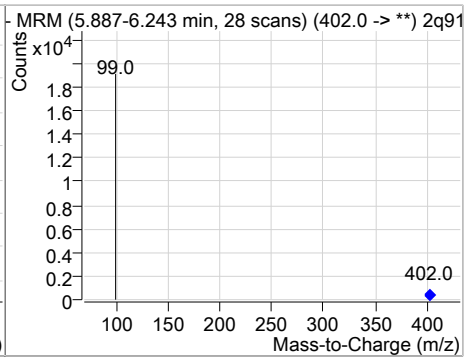


Perfluorinated Compounds by LC/MS/MS

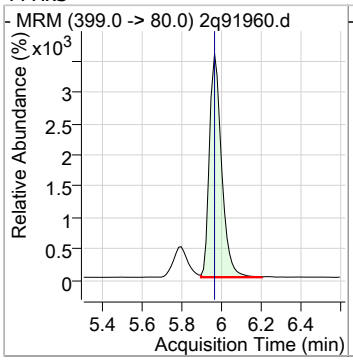
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.31	5.97	0.00	14480				

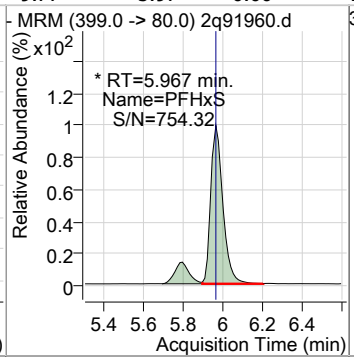


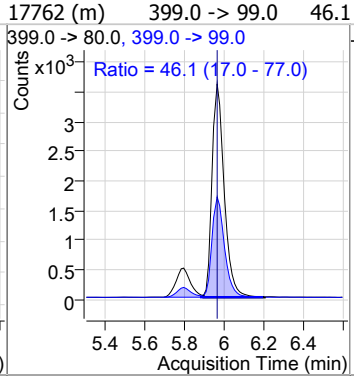


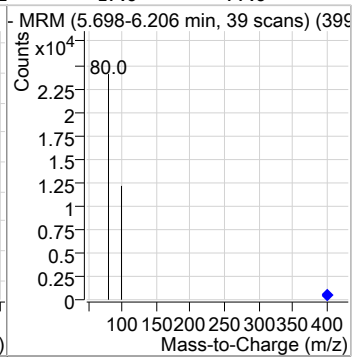


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	9.77	5.97	0.00	17762 (m)	399.0 -> 99.0	46.1	17.0	77.0

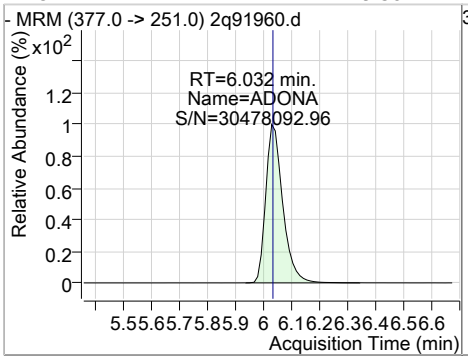


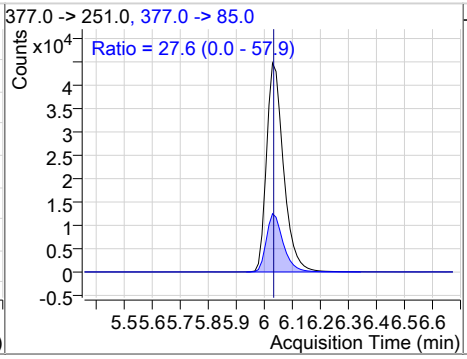


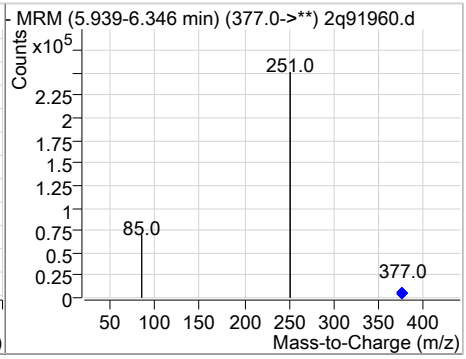




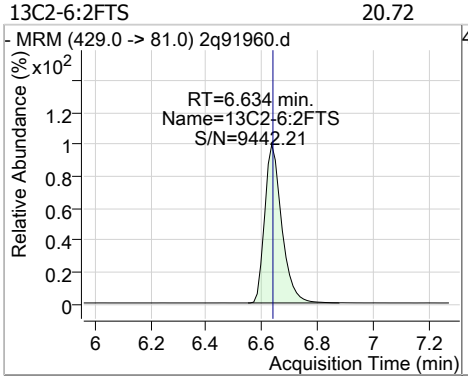
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.38	6.03	0.00	188013	377.0 -> 85.0	27.6	0.0	57.9

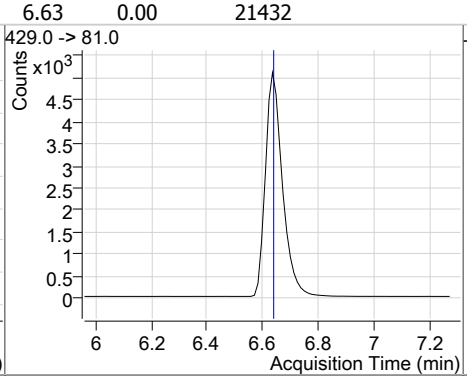


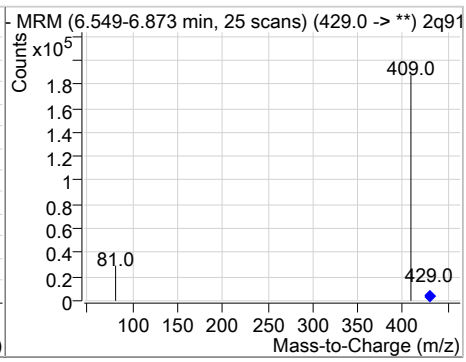




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.72	6.63	0.00	21432				

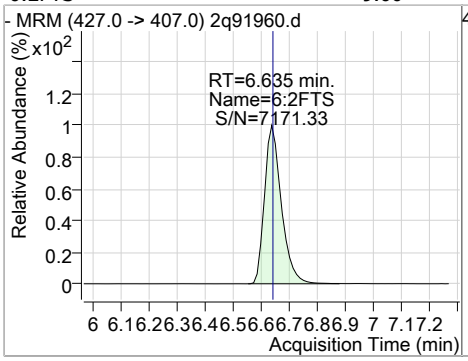


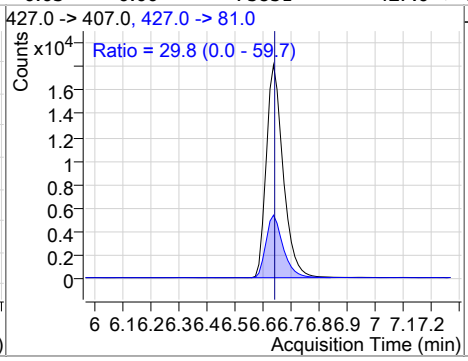


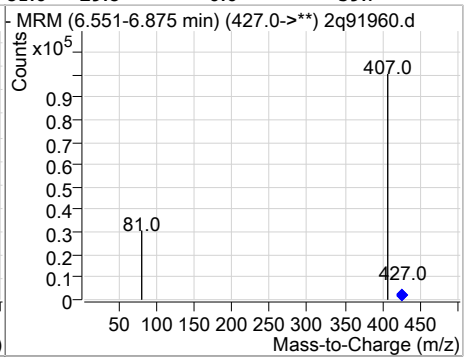


Perfluorinated Compounds by LC/MS/MS

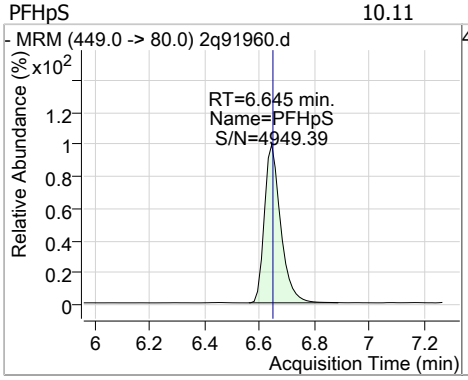
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.60	6.63	0.00	75851	427.0 -> 81.0	29.8	0.0	59.7

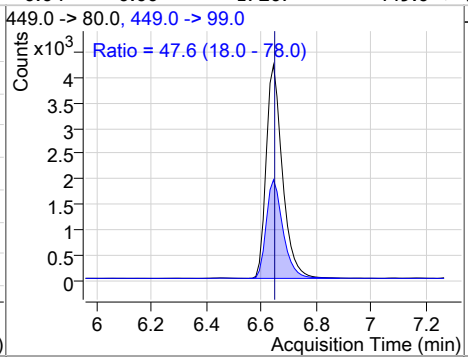


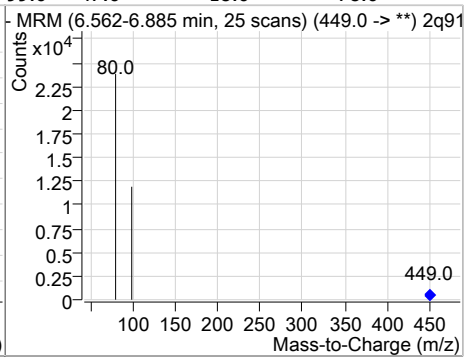




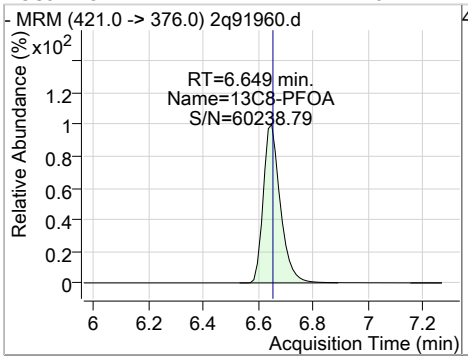
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	10.11	6.64	0.00	17207	449.0 -> 99.0	47.6	18.0	78.0

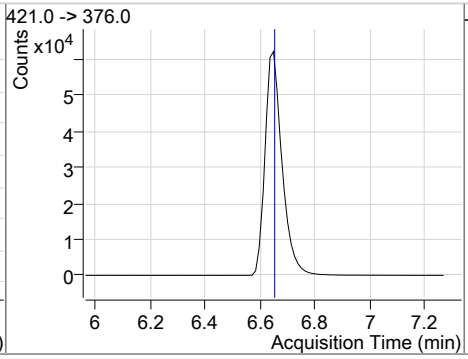


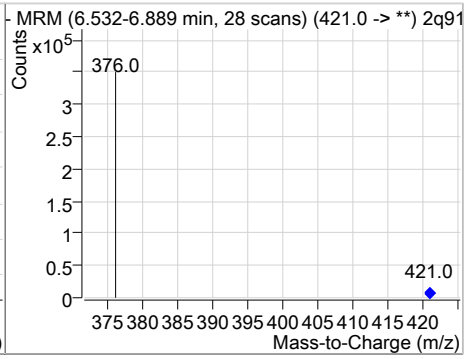




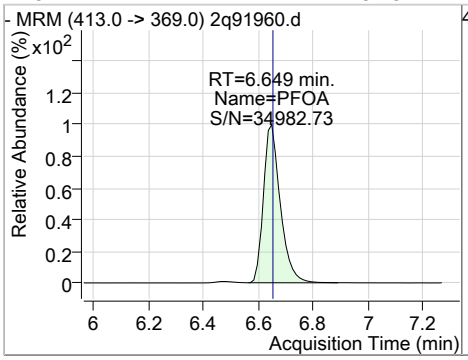
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.72	6.65	0.00	266770				

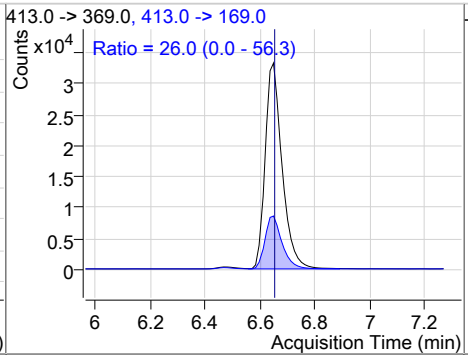


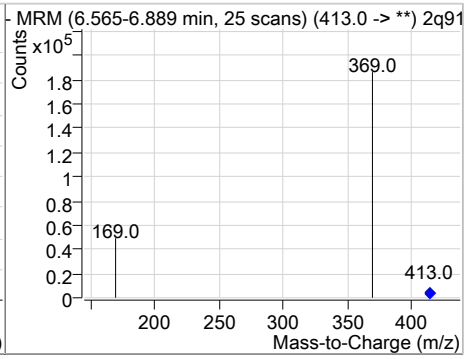




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	9.73	6.65	0.00	141024	413.0 -> 169.0	26.0	0.0	56.3

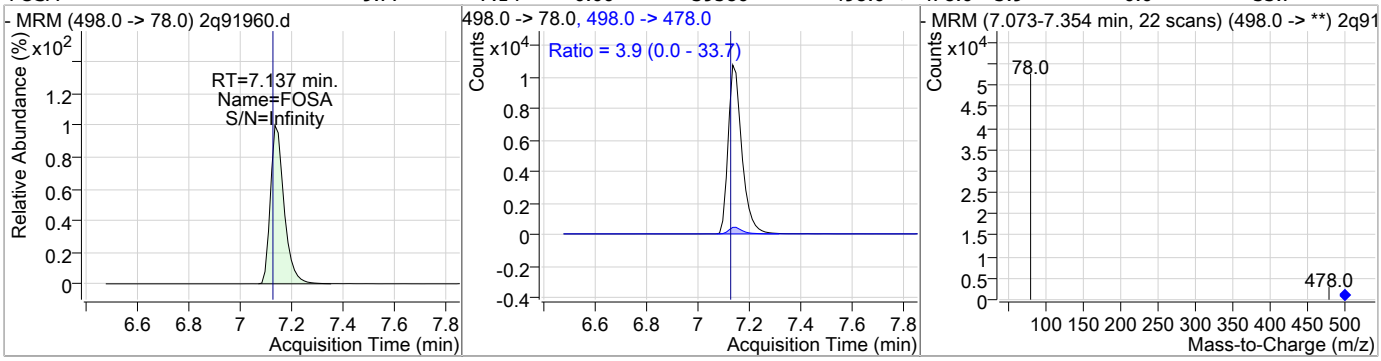




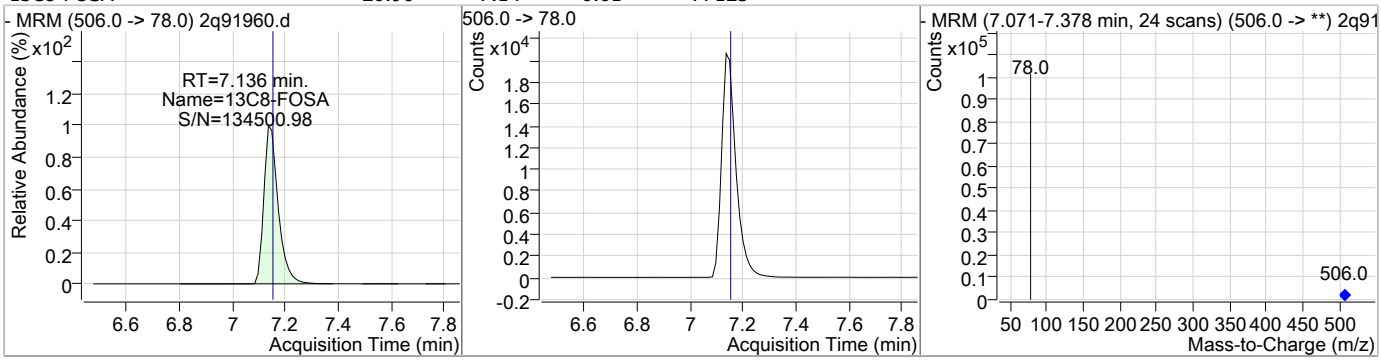


Perfluorinated Compounds by LC/MS/MS

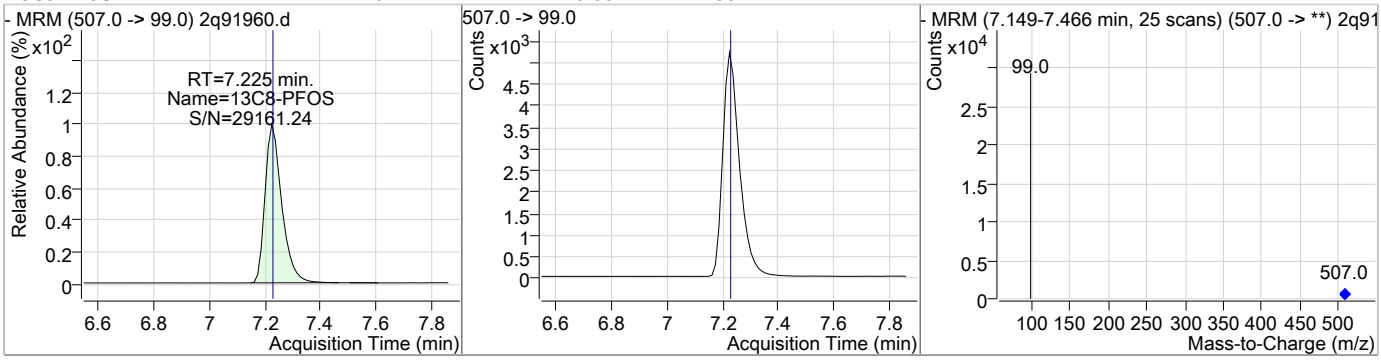
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	9.77	7.14	0.00	39586	498.0 -> 478.0	3.9	0.0	33.7



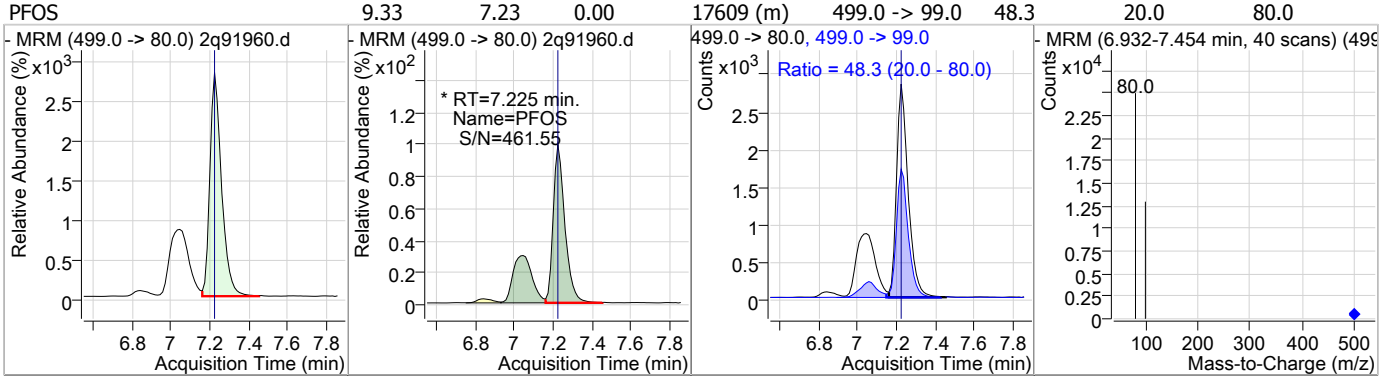
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.96	7.14	-0.01	77125				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.77	7.22	0.00	21557				

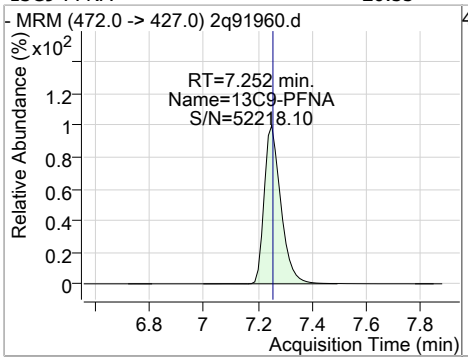


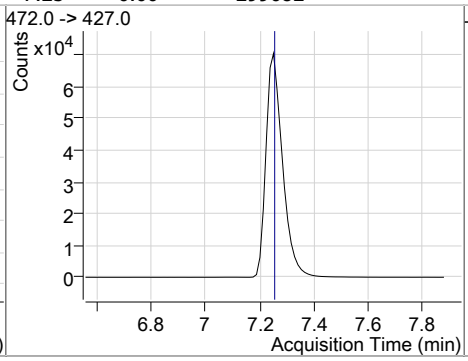
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	9.33	7.23	0.00	17609 (m)	499.0 -> 99.0	48.3	20.0	80.0

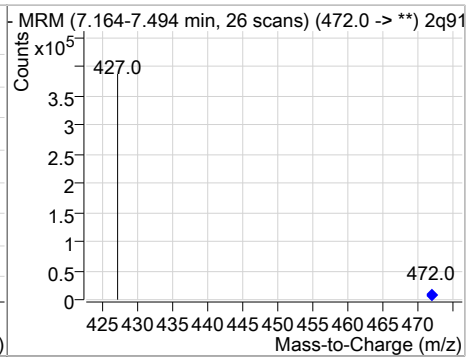


Perfluorinated Compounds by LC/MS/MS

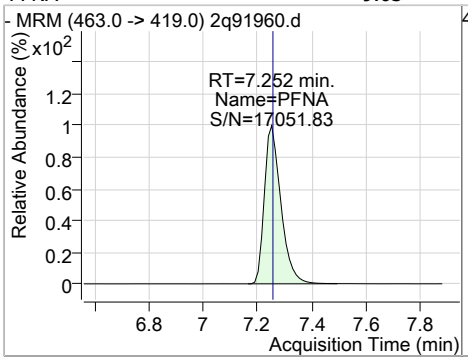
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.55	7.25	0.00	299682				

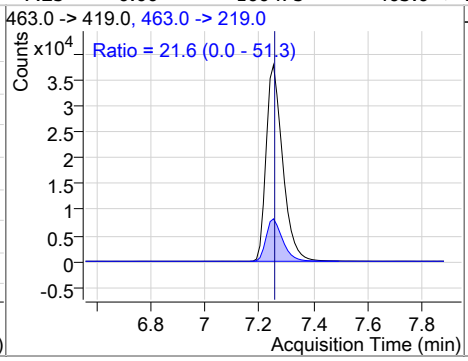


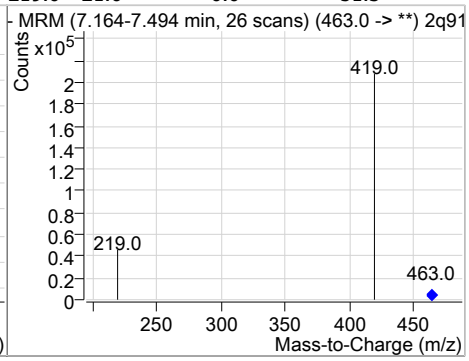




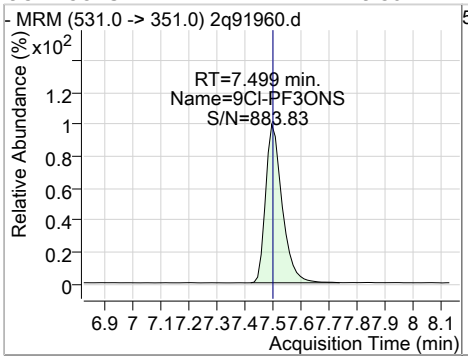
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	9.63	7.25	0.00	160475	463.0 -> 219.0	21.6	0.0	51.3

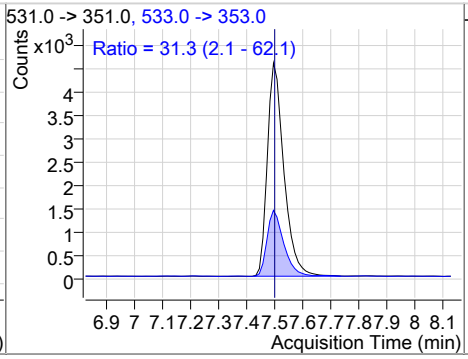


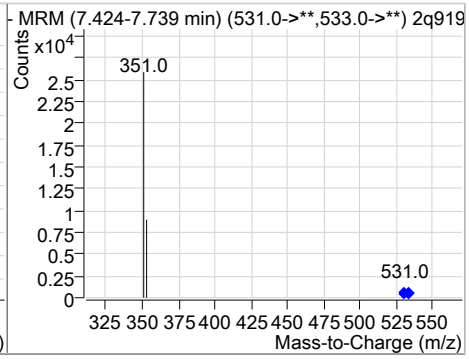




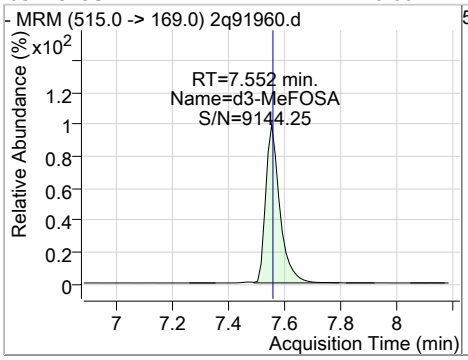
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	9.38	7.50	0.00	18768	533.0 -> 353.0	31.3	2.1	62.1

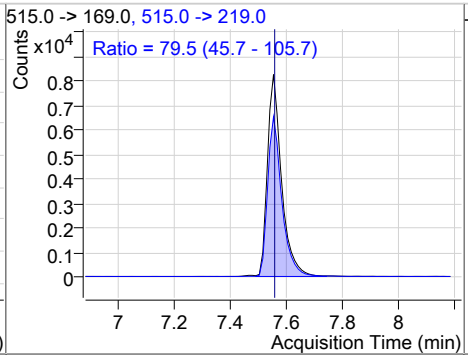


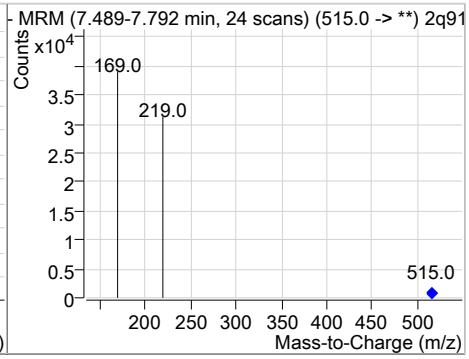




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	20.60	7.55	0.00	28834	515.0 -> 219.0	79.5	45.7	105.7

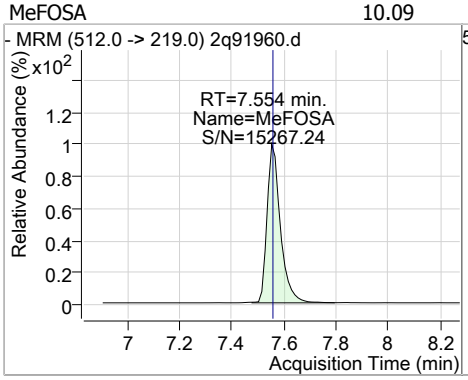


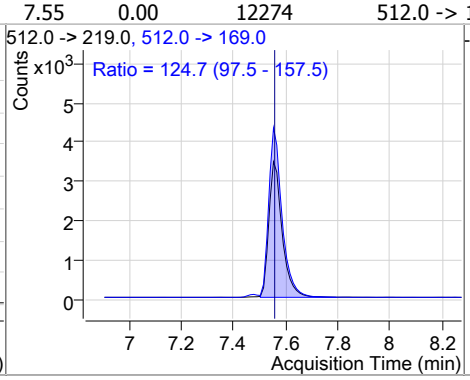


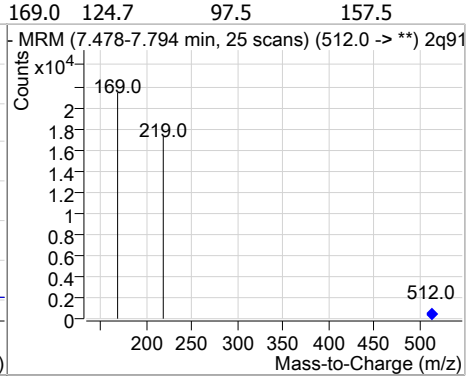


Perfluorinated Compounds by LC/MS/MS

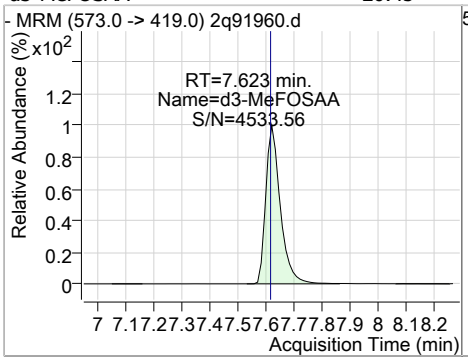
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	10.09	7.55	0.00	12274	512.0 -> 169.0	124.7	97.5	157.5

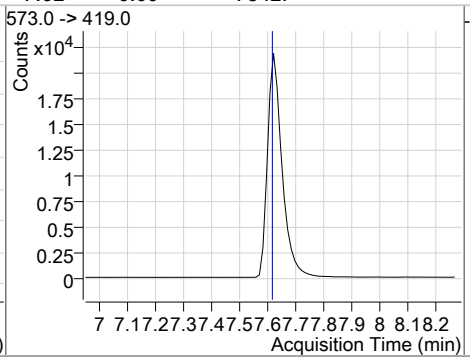


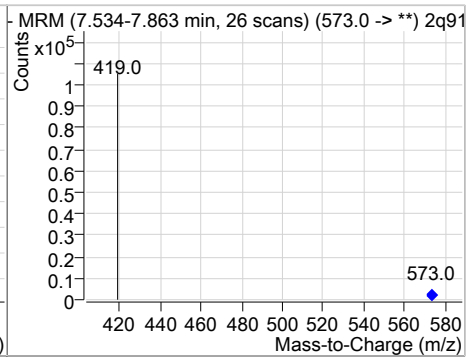




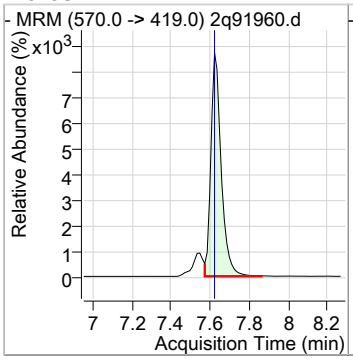
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.45	7.62	0.00	78427				

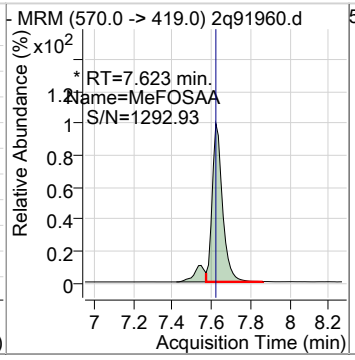


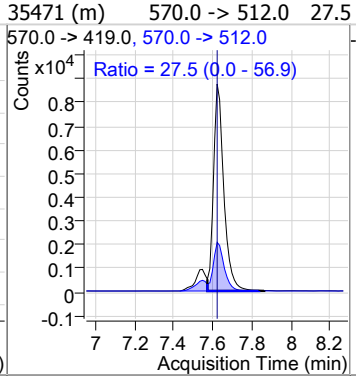


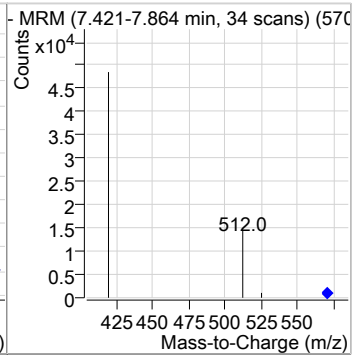


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	9.85	7.62	0.00	35471 (m)	570.0 -> 512.0	27.5	0.0	56.9

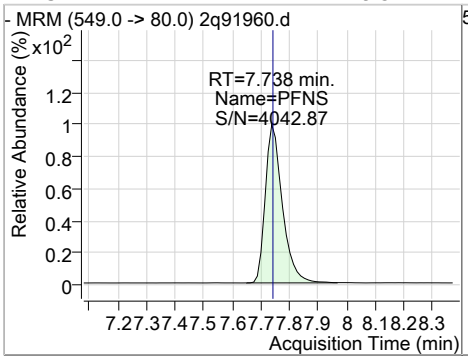


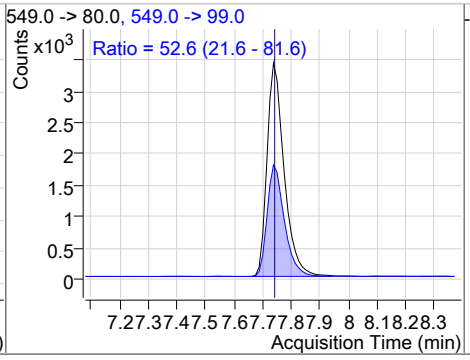


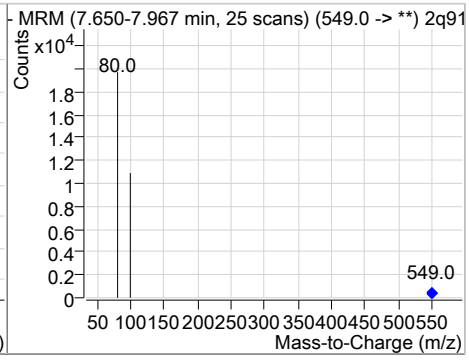




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	9.31	7.74	0.00	14135	549.0 -> 99.0	52.6	21.6	81.6

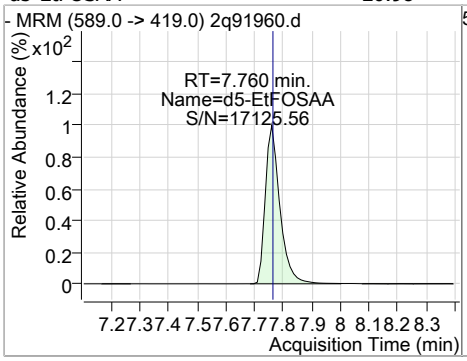


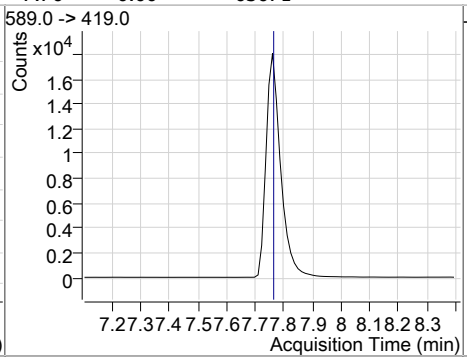


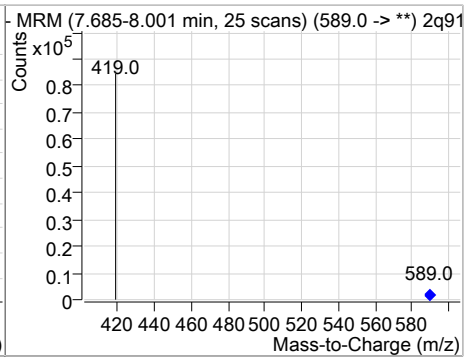


Perfluorinated Compounds by LC/MS/MS

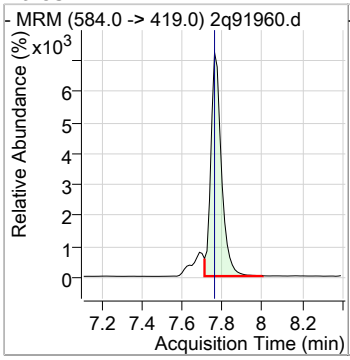
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	20.98	7.76	0.00	63671				

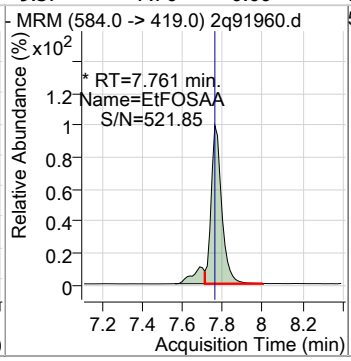


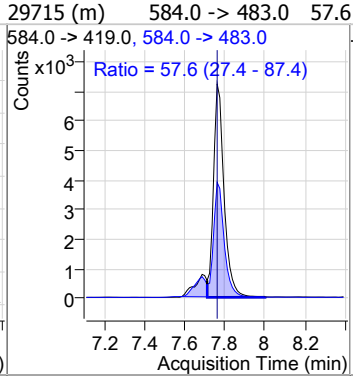


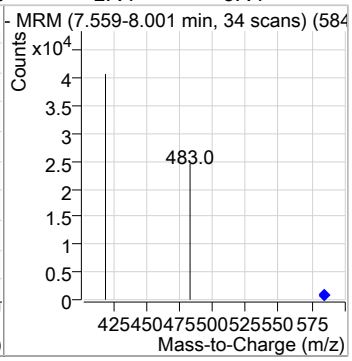


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	9.37	7.76	0.00	29715 (m)	584.0 -> 483.0	57.6	27.4	87.4

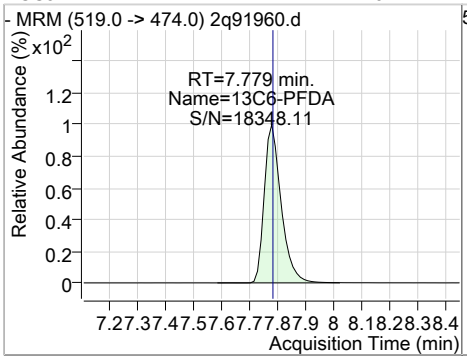


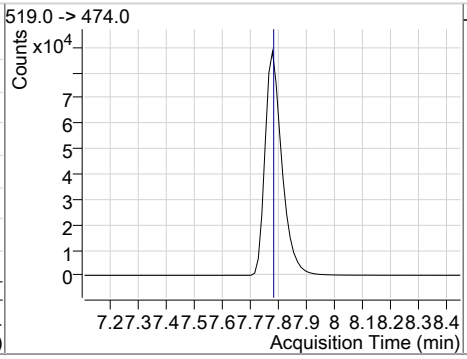


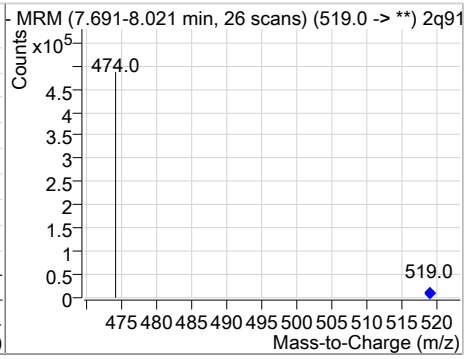




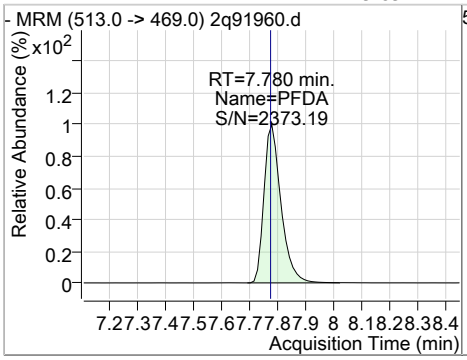
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.27	7.78	0.00	369271				

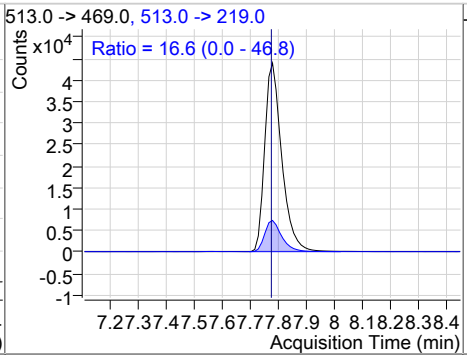


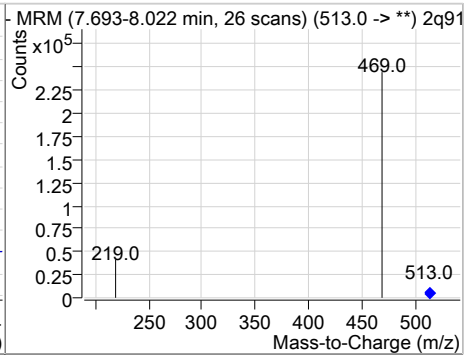




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	9.89	7.78	0.00	185071	513.0 -> 219.0	16.6	0.0	46.8

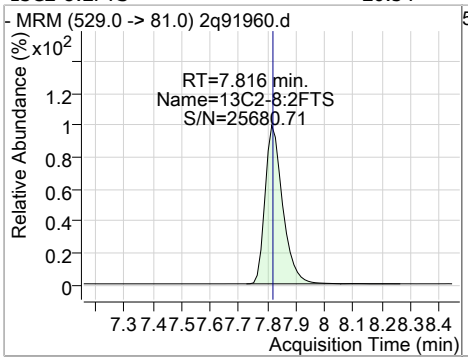


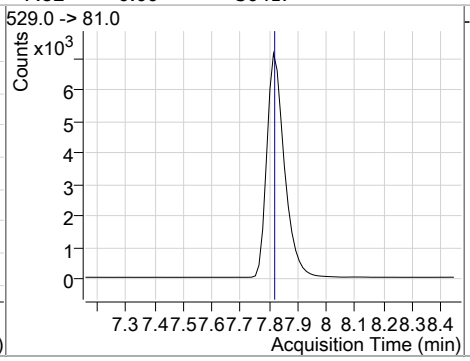


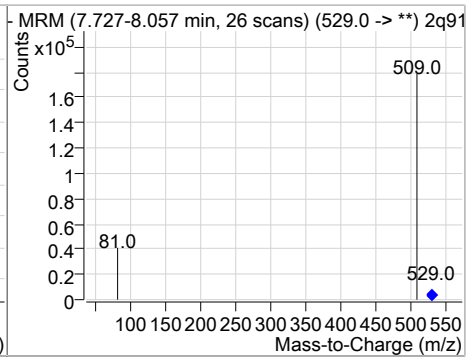


Perfluorinated Compounds by LC/MS/MS

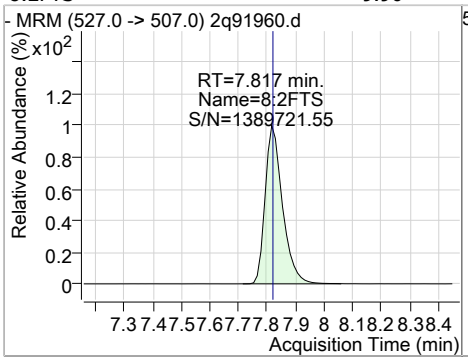
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.54	7.82	0.00	30417				

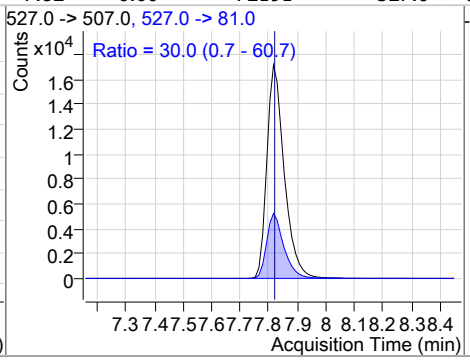


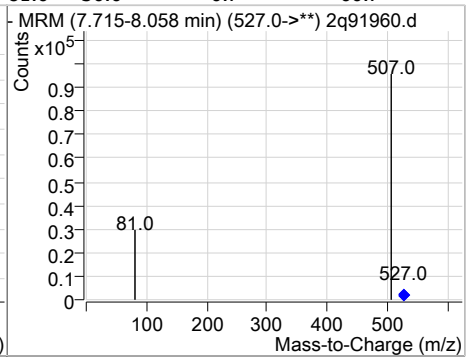




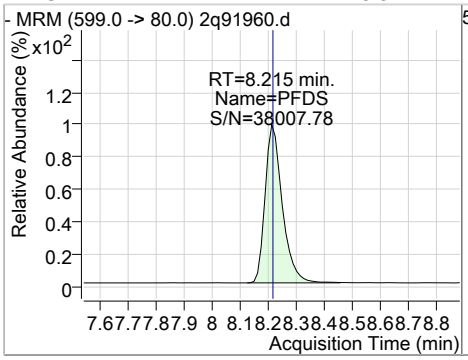
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	9.96	7.82	0.00	72191	527.0 -> 81.0	30.0	0.7	60.7

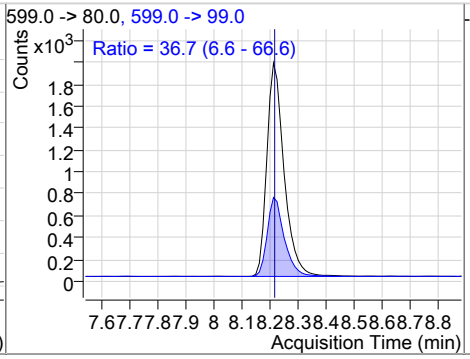


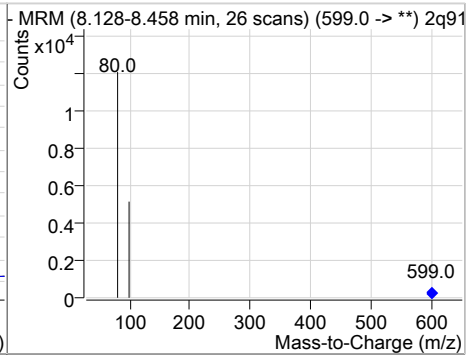




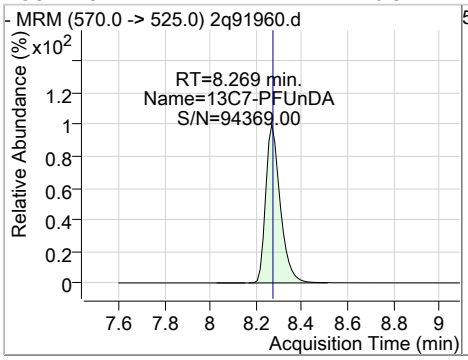
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	9.91	8.22	0.00	8309	599.0 -> 99.0	36.7	6.6	66.6

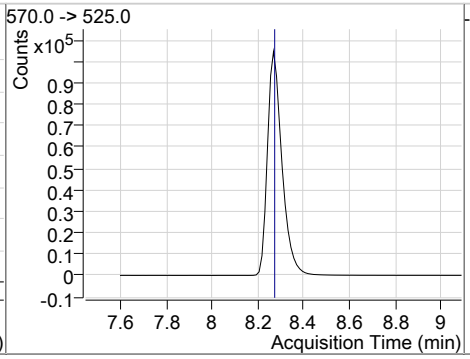


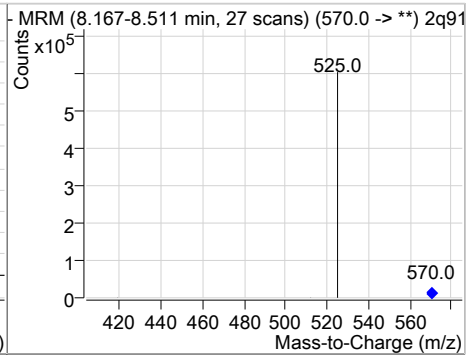




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.31	8.27	0.00	459663				

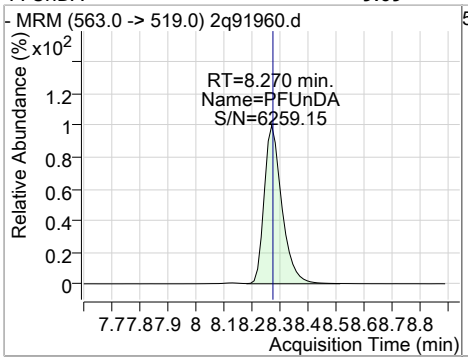


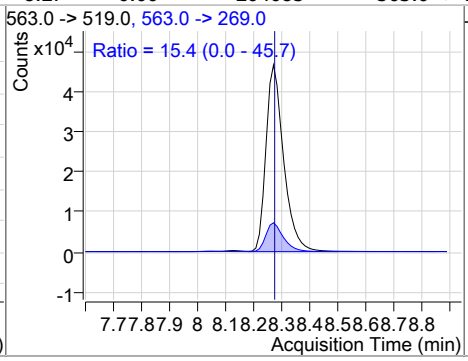


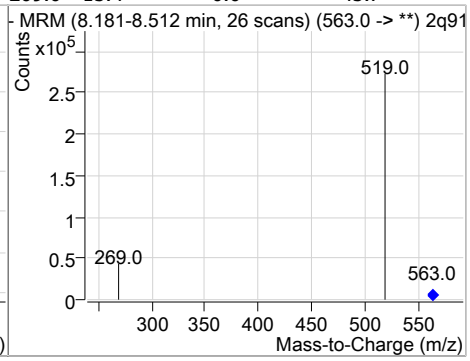


Perfluorinated Compounds by LC/MS/MS

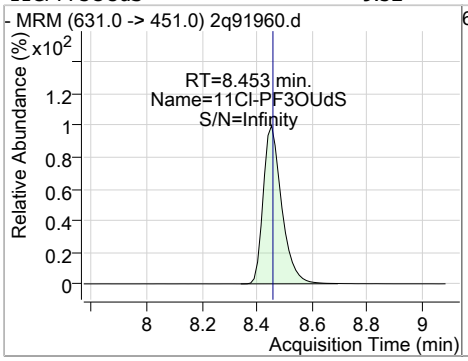
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	9.69	8.27	0.00	204085	563.0 -> 269.0	15.4	0.0	45.7

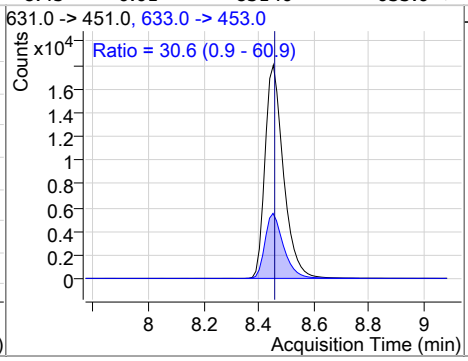


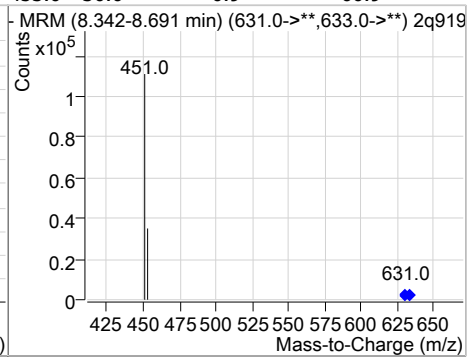




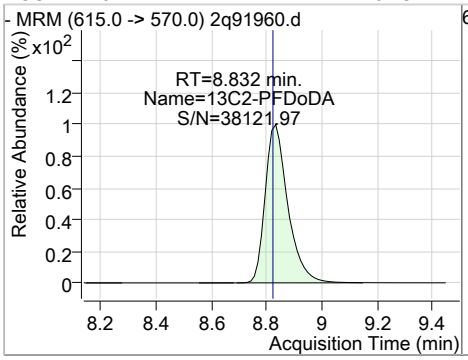
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	9.32	8.45	0.01	83146	633.0 -> 453.0	30.6	0.9	60.9

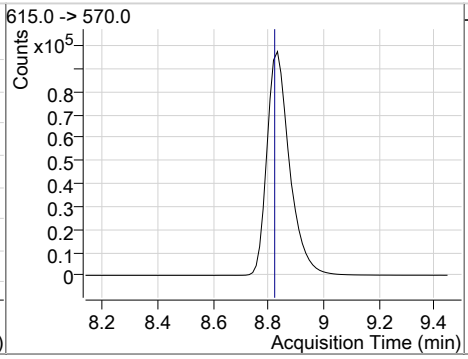


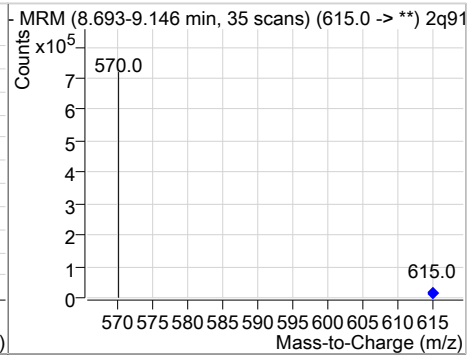




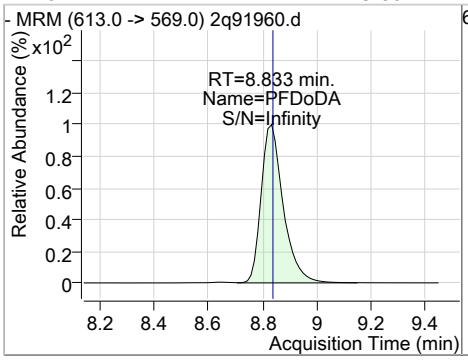
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.49	8.83	0.01	553520				

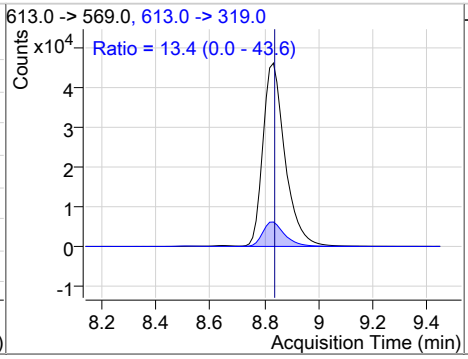


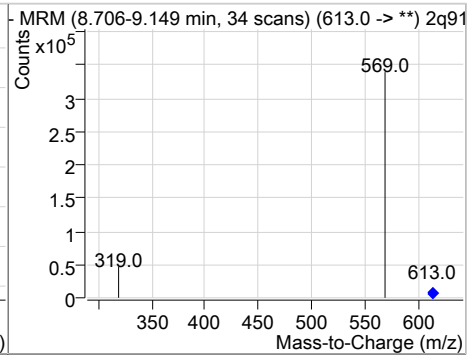




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	9.80	8.83	0.01	260240	613.0 -> 319.0	13.4	0.0	43.6

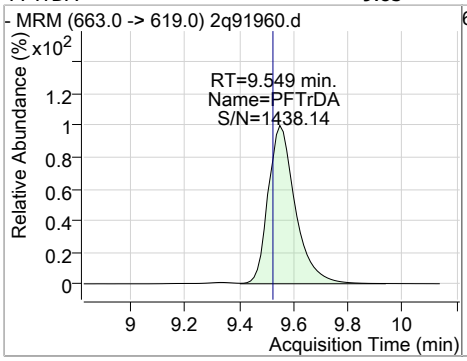


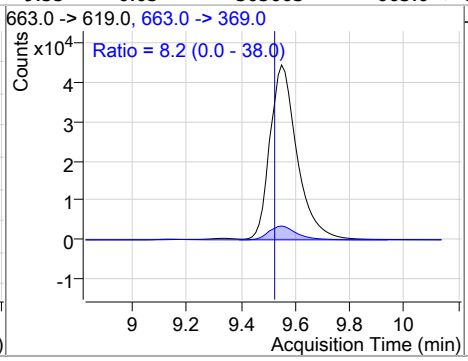


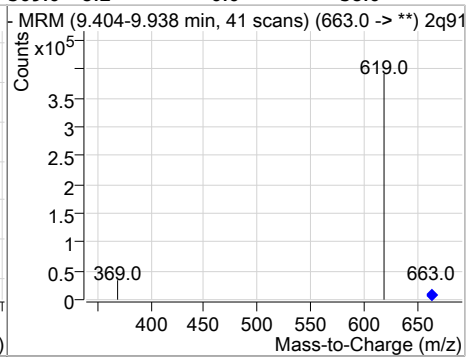


Perfluorinated Compounds by LC/MS/MS

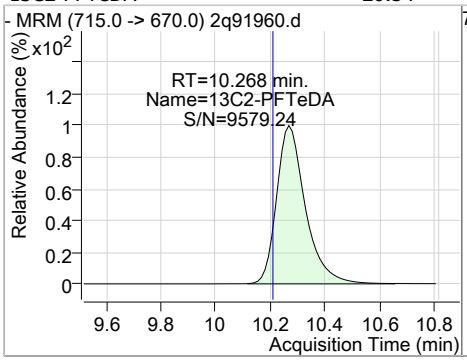
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	9.83	9.55	0.05	305663	663.0 -> 369.0	8.2	0.0	38.0

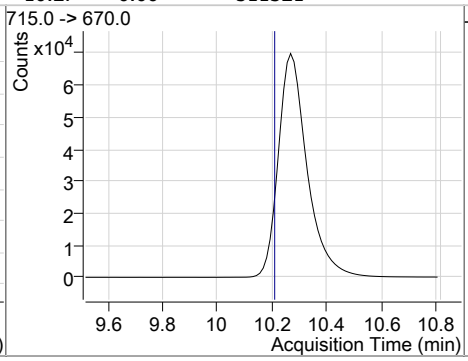


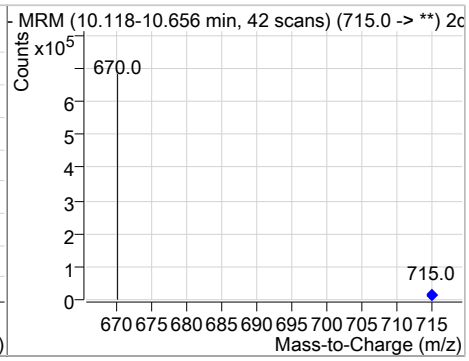




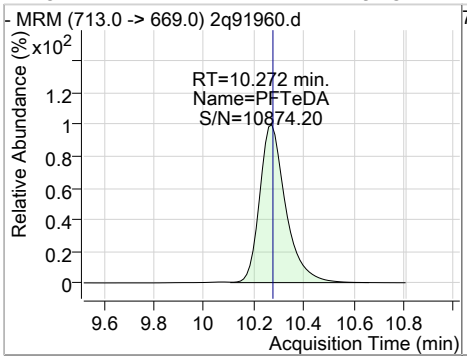
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.54	10.27	0.06	511321				

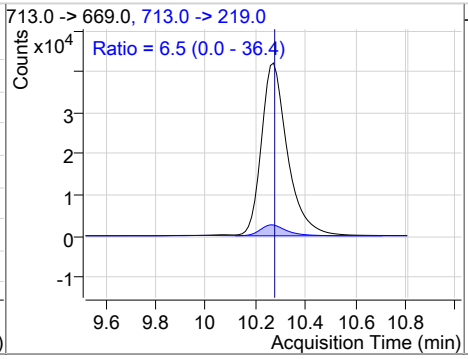


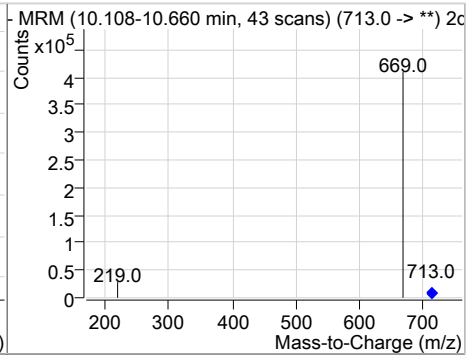




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	9.73	10.27	0.06	302886	713.0 -> 219.0	6.5	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91960.D
Injection Time: 05/27/22 13:19
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

2Q91961.D

Manual Integrations APPROVED (compounds with "m" flag)

Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91961.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 1:38:30 PM
Sample Name : icc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

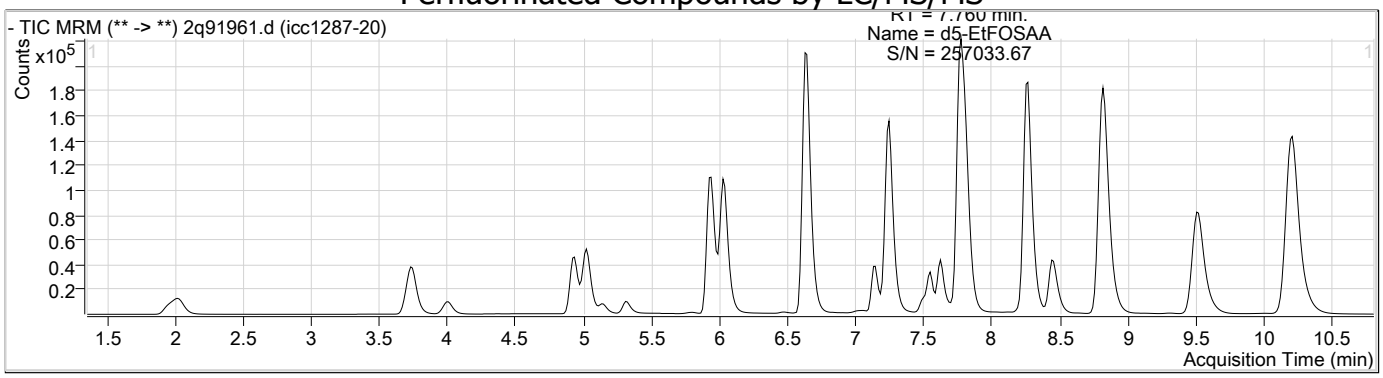
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	54644	20.00	µg/L	0.000
M4-PFBA	2.014	217.0 -> 172.0	69252	20.00	µg/L	0.000
M5-PFPeA	3.736	268.0 -> 223.0	81525	20.00	µg/L	0.000
M5-PFHxA	5.027	318.0 -> 273.0	120431	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	166832	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	231965	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	260891	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	325834	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	404861	20.00	µg/L	0.000
M2-PFDoDA	8.818	615.0 -> 570.0	485739	20.00	µg/L	0.000
M2-PFTeDA	10.205	715.0 -> 670.0	445468	20.00	µg/L	0.000
M8-FOSA	7.149	506.0 -> 78.0	65794	20.00	µg/L	0.000
M3-PFBS	4.004	302.0 -> 99.0	9041	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	12522	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	18511	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	8373	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	18144	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	26765	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	68101	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	4765	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	25030	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8373	18.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.0%		
13C2-6:2FTS	6.634	429.0 -> 81.0	18144	17.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%		
13C2-8:2FTS	7.816	529.0 -> 81.0	26765	18.07	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.4%		
13C2-PFDoDA	8.818	615.0 -> 570.0	485739	17.98	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.9%		
13C2-PFTeDA	10.205	715.0 -> 670.0	445468	17.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%		
13C3-PFBS	4.004	302.0 -> 99.0	9041	17.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C3-PFHxS	5.967	402.0 -> 99.0	12522	17.56	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C4-PFBA	2.014	217.0 -> 172.0	69252	17.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.6%		
13C4-PFHpA	5.929	367.0 -> 322.0	166832	17.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%		
d5-EtFOSAA	7.760	589.0 -> 419.0	54644	18.00	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.0%		
13C5-PFHxA	5.027	318.0 -> 273.0	120431	17.84	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%		
13C5-PFPeA	3.736	268.0 -> 223.0	81525	17.89	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

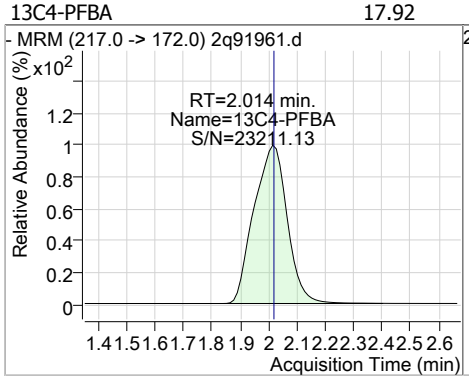
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
13C6-PFDA	7.779	519.0 -> 474.0	325834	17.89	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
13C7-PFUnDA	8.269	570.0 -> 525.0	404861	17.89	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%			
13C8-FOSA	7.149	506.0 -> 78.0	65794	17.88	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
13C8-PFOA	6.649	421.0 -> 376.0	231965	18.02	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%			
13C8-PFOS	7.225	507.0 -> 99.0	18511	17.84	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%			
13C9-PFNA	7.252	472.0 -> 427.0	260891	17.89	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
d3-MeFOSAA	7.623	573.0 -> 419.0	68101	17.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4765	18.30	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.5%			
d3-MeFOSA	7.552	515.0 -> 169.0	25030	17.88	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	87497	19.94	µg/L		100
6:2FTS	6.635	427.0 -> 407.0	137752	20.59	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	127594	20.01	µg/L		100
EtFOSAA	7.761	584.0 -> 419.0	53736	19.74	µg/L	m	100
FOSA	7.137	498.0 -> 78.0	70059	20.28	µg/L		98
MeFOSAA	7.623	570.0 -> 419.0	64954	20.76	µg/L	m	100
PFBA	2.021	213.0 -> 169.0	35565	20.03	µg/L		100
PFBS	4.007	299.0 -> 80.0	30438	20.19	µg/L		99
PFDA	7.780	513.0 -> 469.0	329397	19.95	µg/L		100
PFDoDA	8.819	613.0 -> 569.0	463912	19.91	µg/L		100
PFDS	8.215	599.0 -> 80.0	15033	20.36	µg/L		98
PFHpA	5.930	363.0 -> 319.0	270738	19.85	µg/L		100
PFHpS	6.645	449.0 -> 80.0	31116	21.14	µg/L		99
PFHxA	5.028	313.0 -> 269.0	90662	20.35	µg/L		100
PFHxS	5.967	399.0 -> 80.0	32505	20.68	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	290869	20.05	µg/L		100
PFNS	7.738	549.0 -> 80.0	25396	19.48	µg/L		97
PFOA	6.649	413.0 -> 369.0	252147	20.01	µg/L		100
PFOS	7.225	499.0 -> 80.0	31988	19.74	µg/L	m	95
PFPeA	3.739	263.0 -> 219.0	127579	20.32	µg/L		100
PFPeS	5.145	349.0 -> 80.0	21132	20.50	µg/L		99
PFTeDA	10.210	713.0 -> 669.0	539322	19.89	µg/L		100
PFTrDA	9.504	663.0 -> 619.0	527847	19.35	µg/L		99
PFUnDA	8.270	563.0 -> 519.0	367496	19.82	µg/L		100
11Cl-PF3OUdS	8.440	631.0 -> 451.0	152486	19.47	µg/L		100
9Cl-PF3ONS	7.499	531.0 -> 351.0	34217	19.38	µg/L		98
ADONA	6.032	377.0 -> 251.0	336010	19.27	µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	33770	19.66	µg/L		99
MeFOSA	7.554	512.0 -> 219.0	21708	20.56	µg/L		99

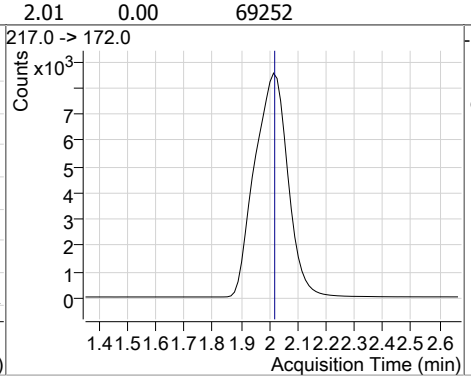
= Qualifier out of range, m = manually integrated, + = Area summed

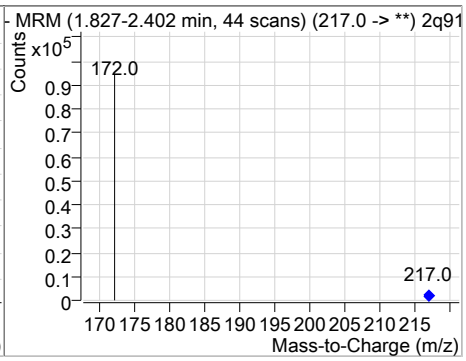
Perfluorinated Compounds by LC/MS/MS



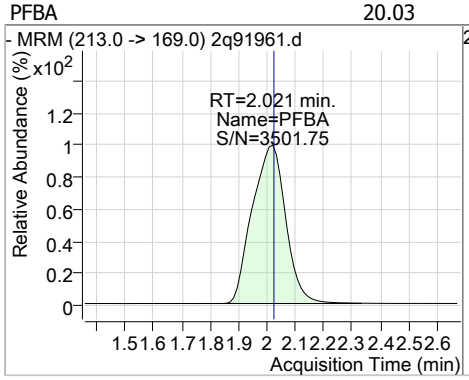
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.92	2.01	0.00	69252				

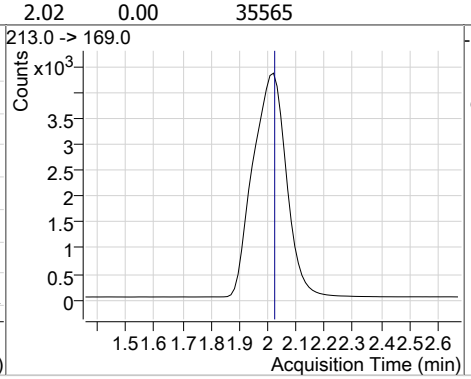


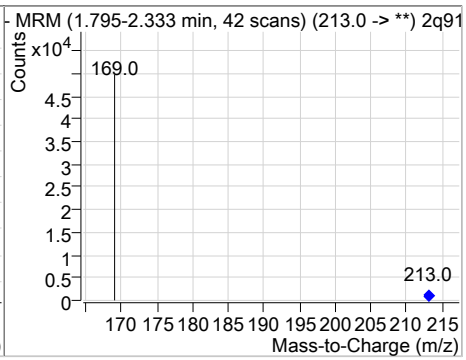




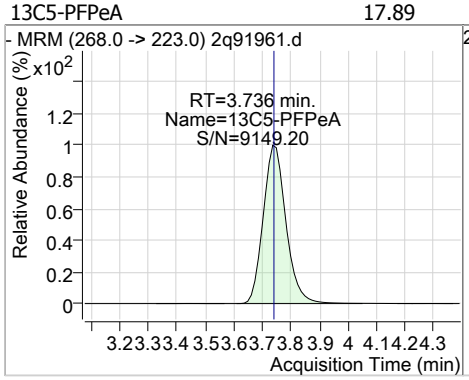
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.03	2.02	0.00	35565				

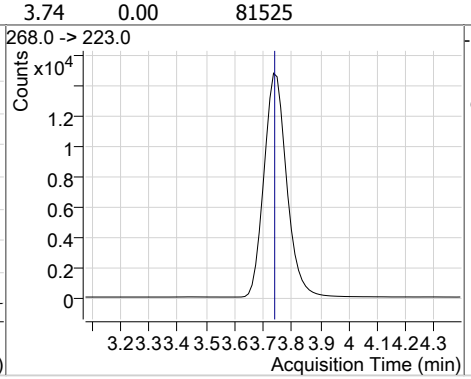


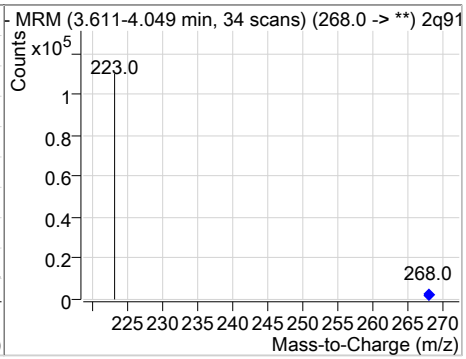




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.89	3.74	0.00	81525				

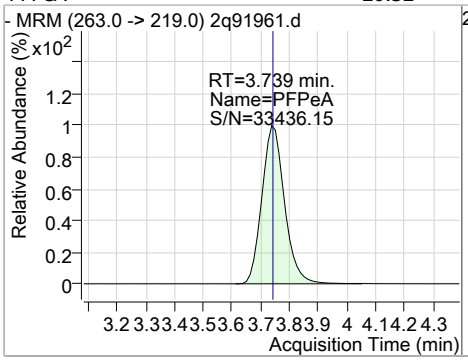


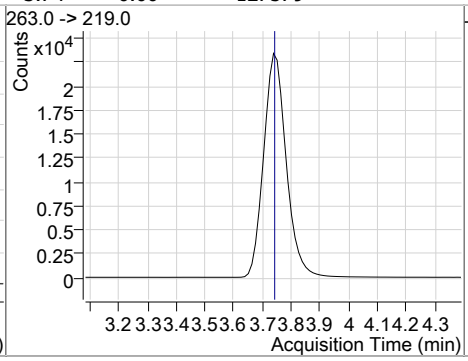


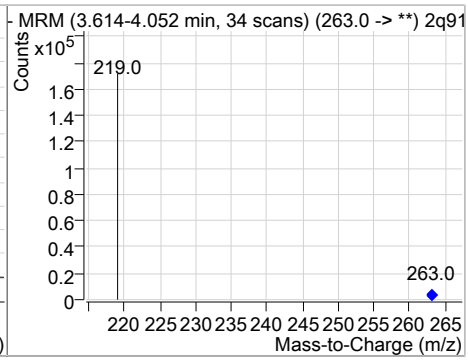


Perfluorinated Compounds by LC/MS/MS

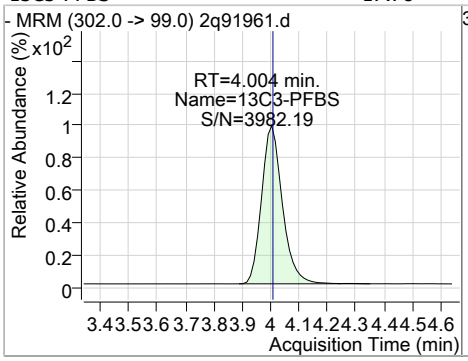
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	20.32	3.74	0.00	127579				

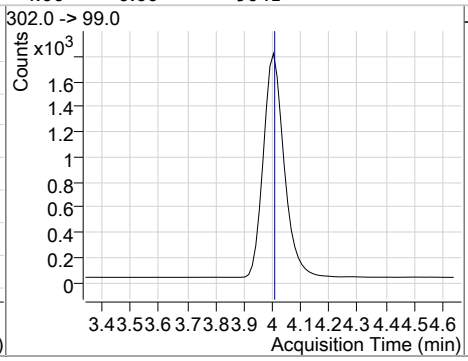


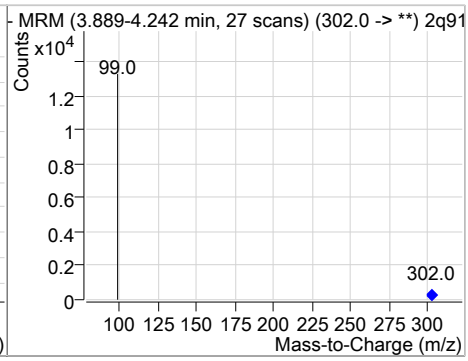




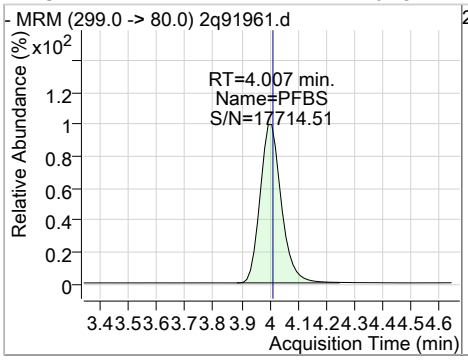
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.78	4.00	0.00	9041				

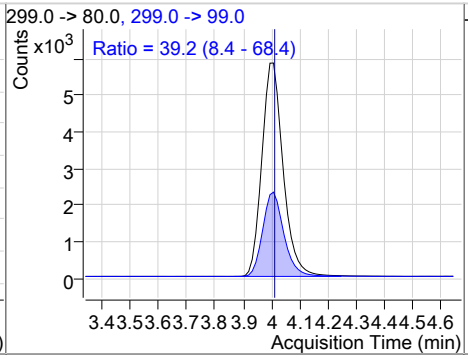


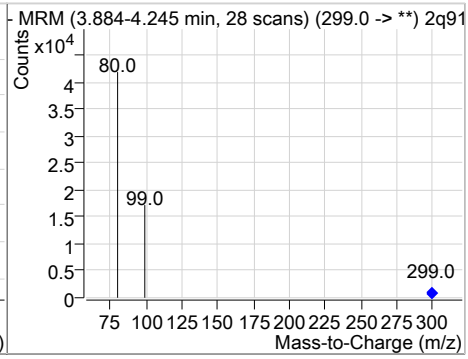




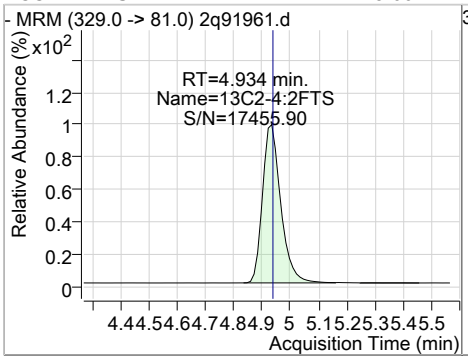
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	20.19	4.01	0.00	30438	299.0 -> 99.0	39.2	8.4	68.4

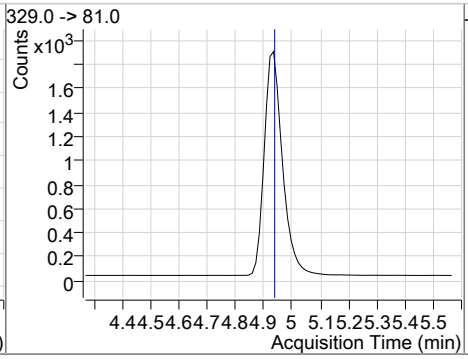


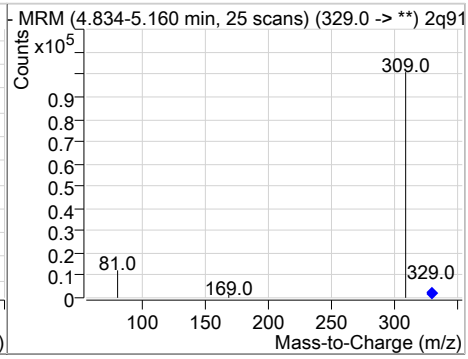




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.00	4.93	0.00	8373				

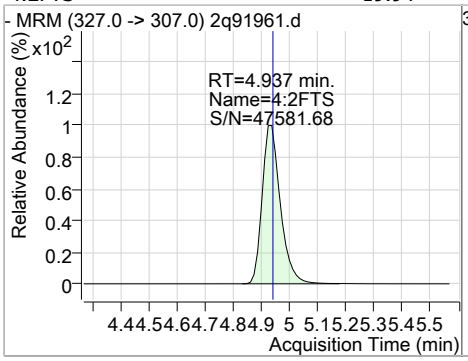


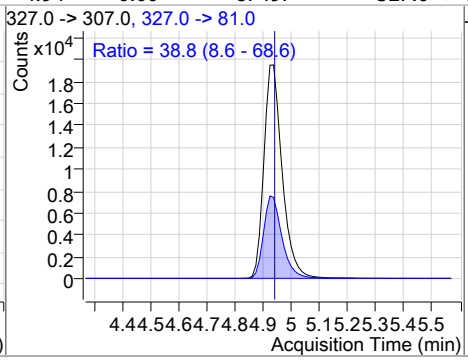


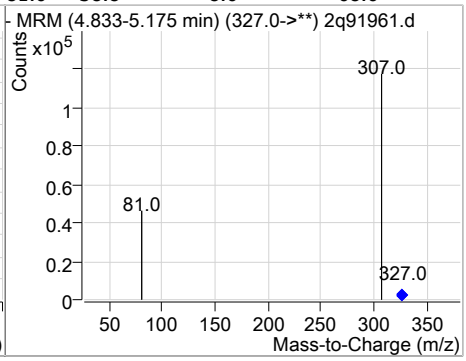


Perfluorinated Compounds by LC/MS/MS

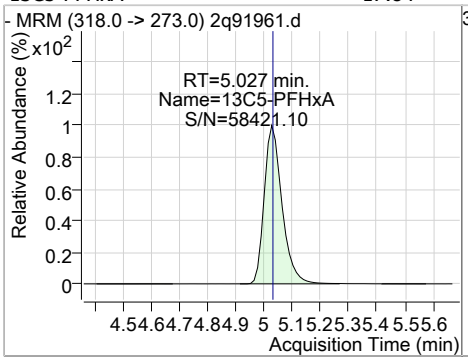
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	19.94	4.94	0.00	87497	327.0 -> 81.0	38.8	8.6	68.6

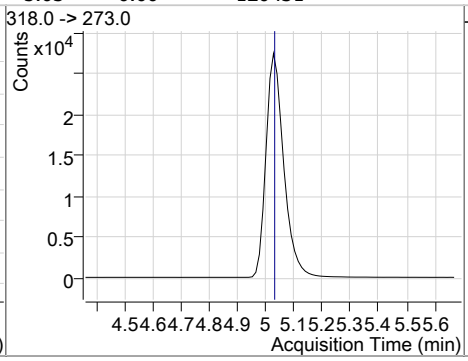


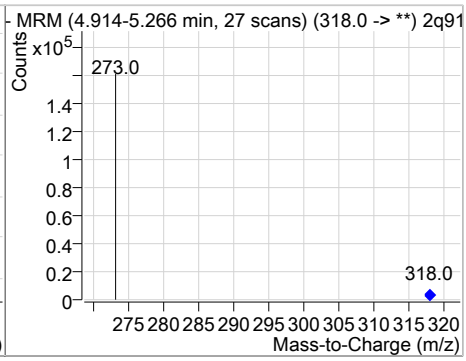




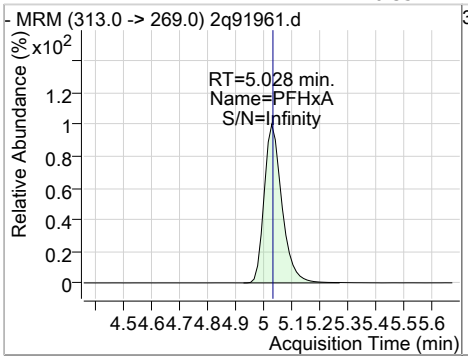
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.84	5.03	0.00	120431				

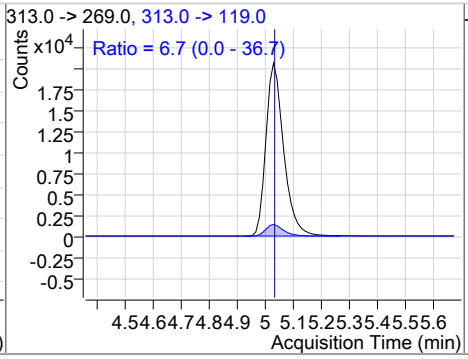


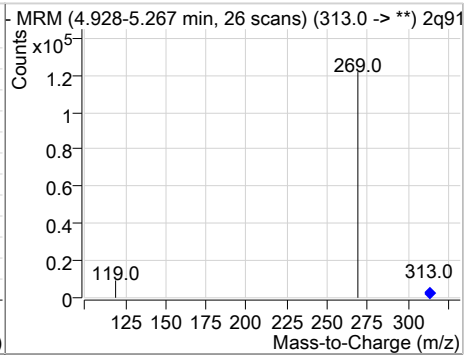




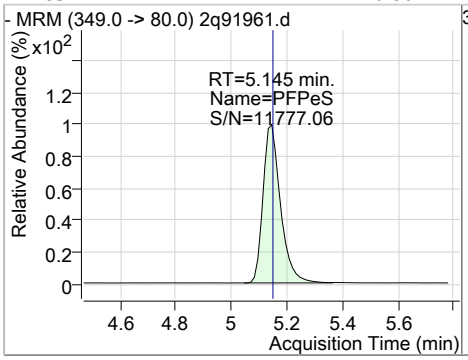
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.35	5.03	0.00	90662	313.0 -> 119.0	6.7	0.0	36.7

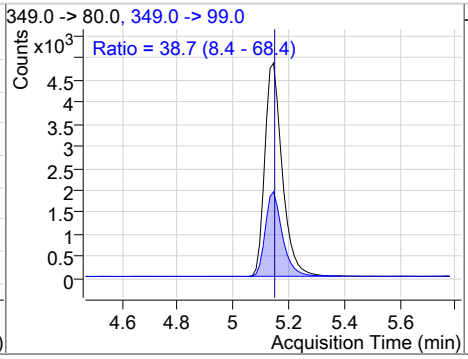


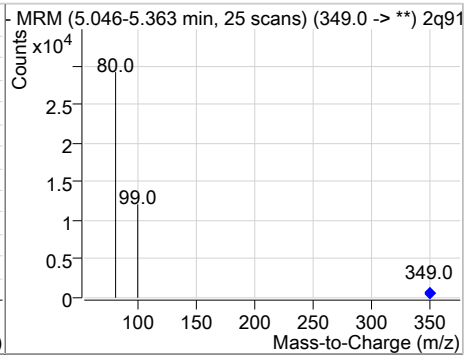




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.50	5.15	0.00	21132	349.0 -> 99.0	38.7	8.4	68.4

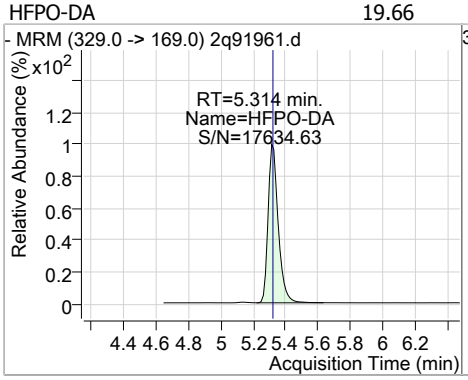


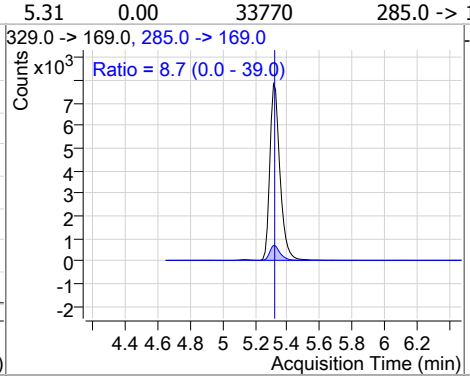


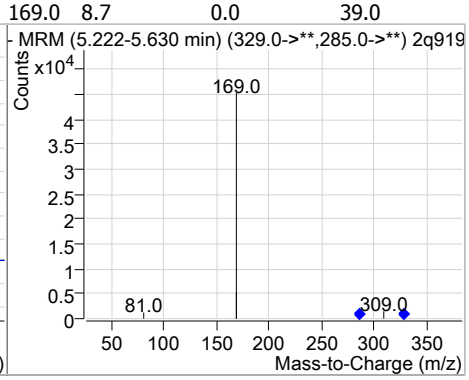


Perfluorinated Compounds by LC/MS/MS

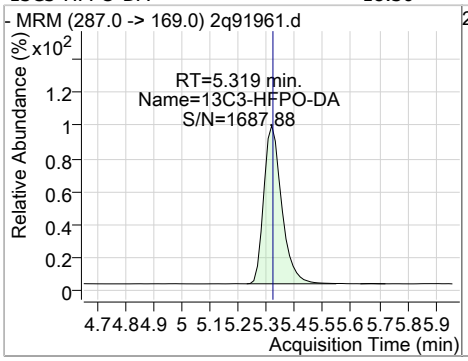
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.66	5.31	0.00	33770	285.0 -> 169.0	8.7	0.0	39.0

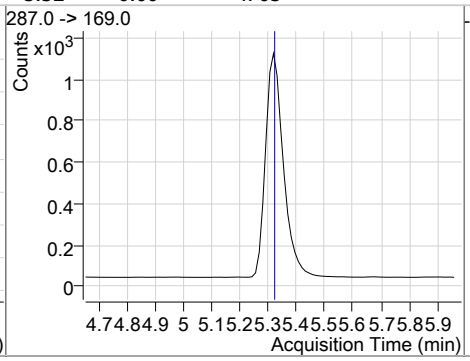


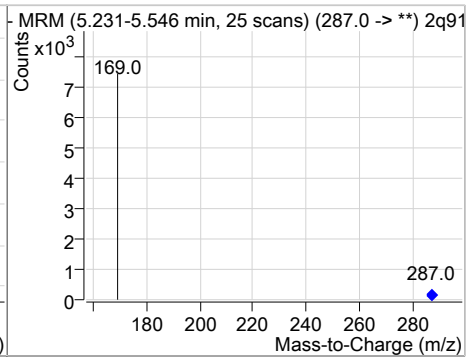




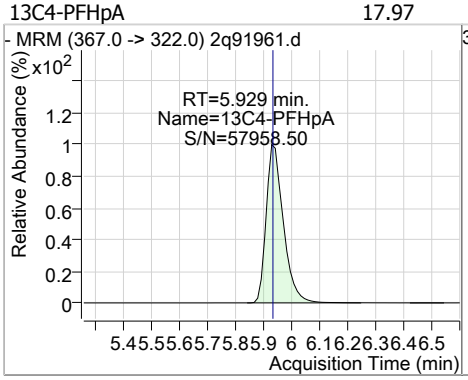
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.30	5.32	0.00	4765				

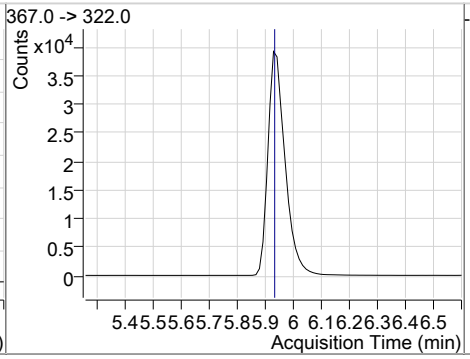


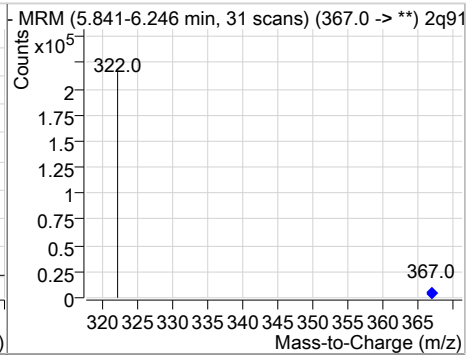




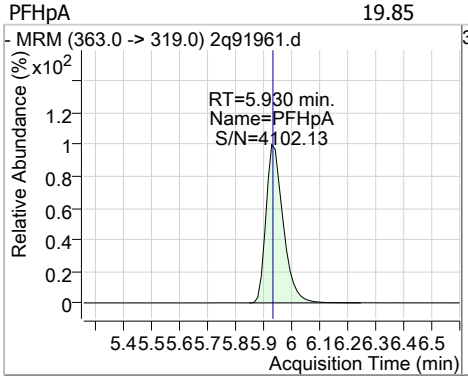
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.97	5.93	0.00	166832				

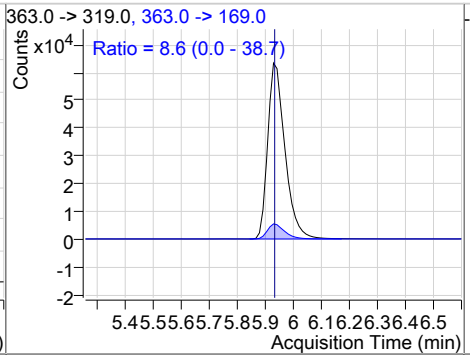


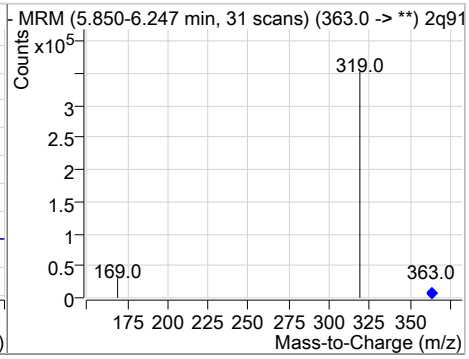




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.85	5.93	0.00	270738	363.0 -> 169.0	8.6	0.0	38.7

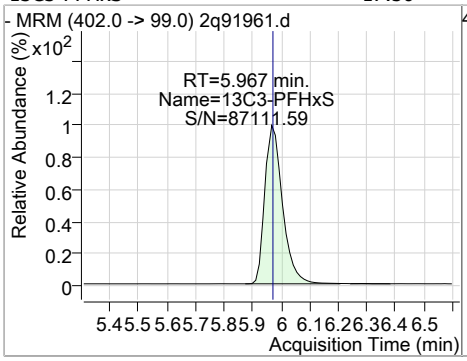


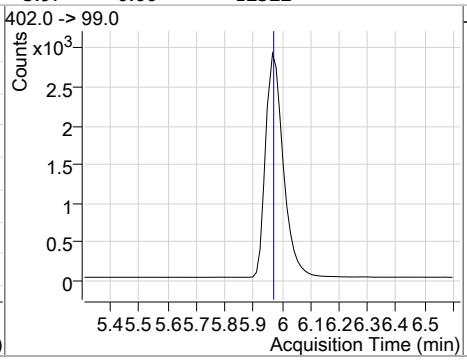


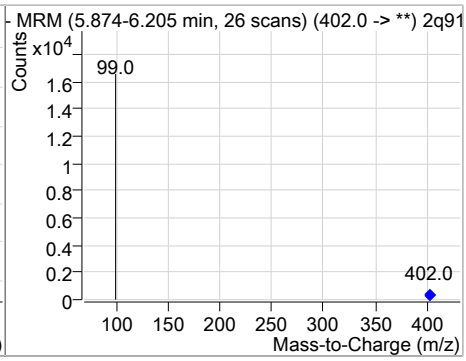


Perfluorinated Compounds by LC/MS/MS

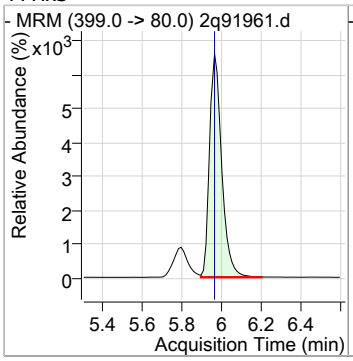
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.56	5.97	0.00	12522				

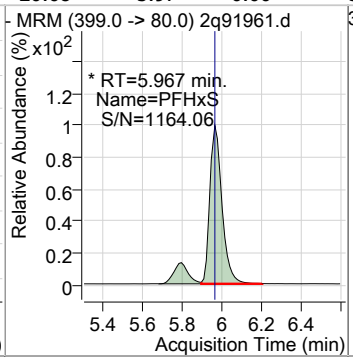


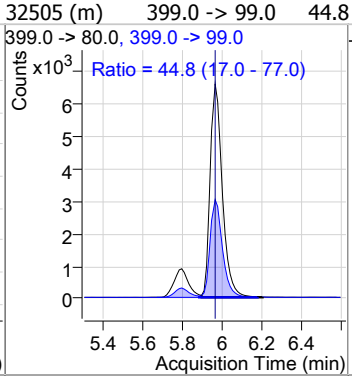


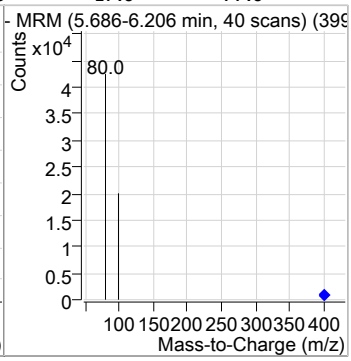


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.68	5.97	0.00	32505 (m)	399.0 -> 99.0	44.8	17.0	77.0

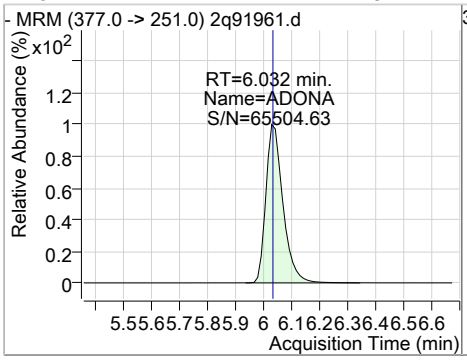


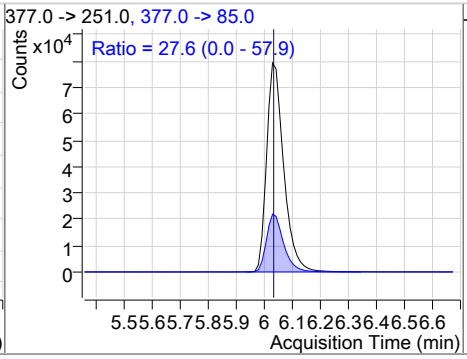


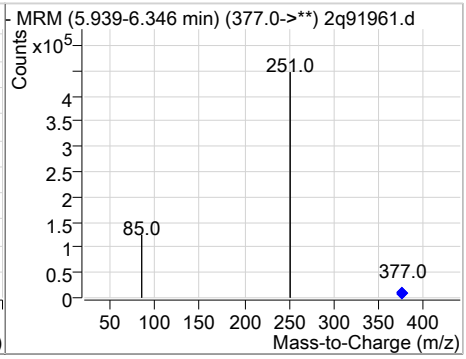




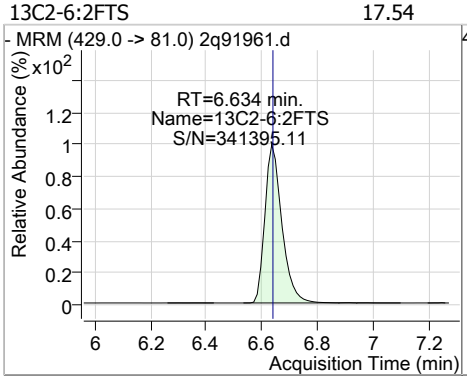
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.27	6.03	0.00	336010	377.0 -> 85.0	27.6	0.0	57.9

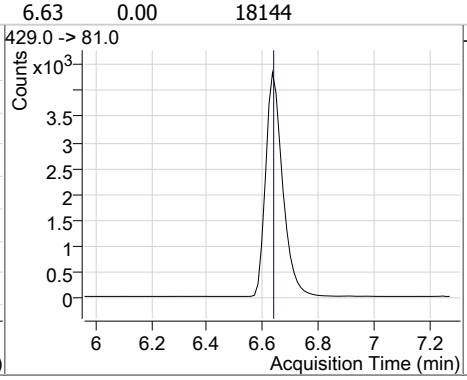


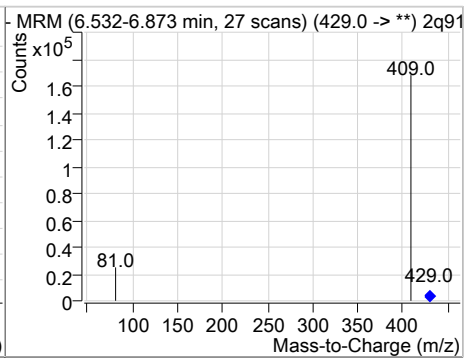




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.54	6.63	0.00	18144				

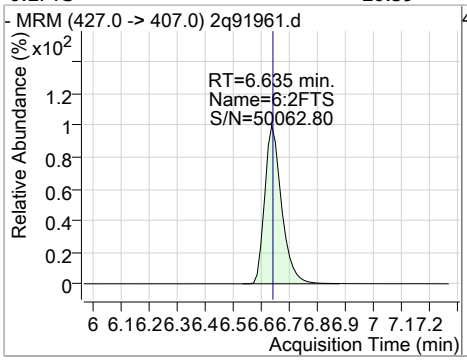


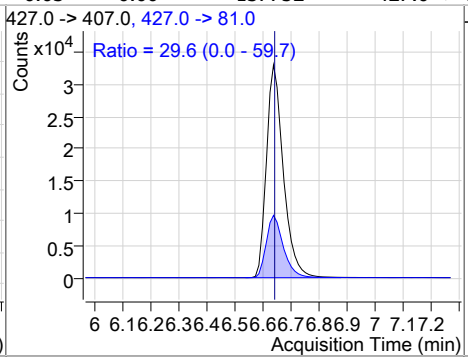


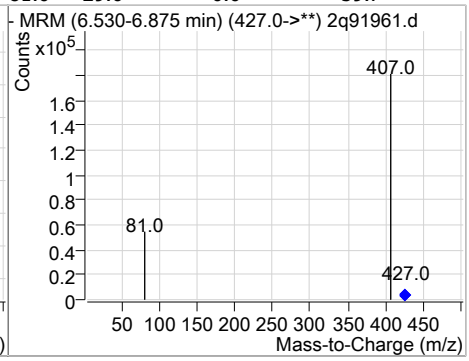


Perfluorinated Compounds by LC/MS/MS

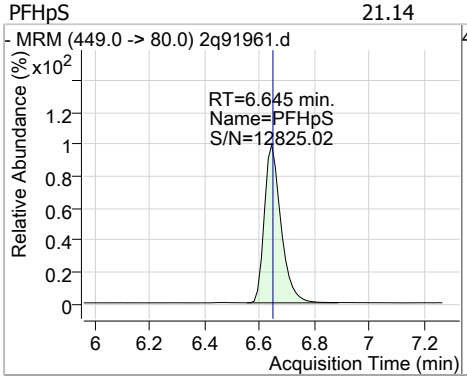
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.59	6.63	0.00	137752	427.0 -> 81.0	29.6	0.0	59.7

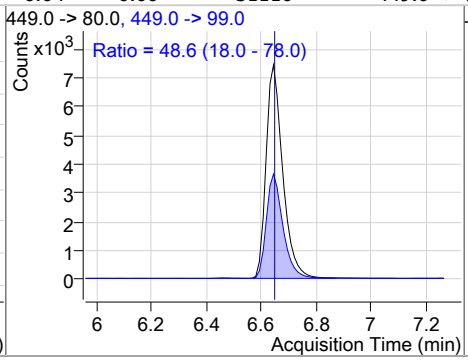


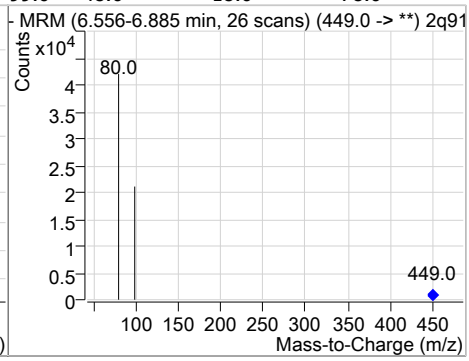




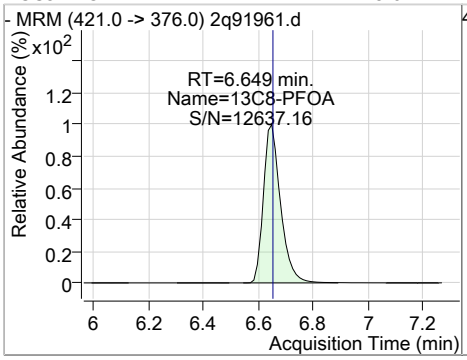
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	21.14	6.64	0.00	31116	449.0 -> 99.0	48.6	18.0	78.0

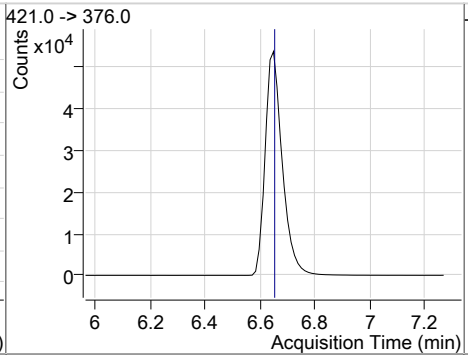


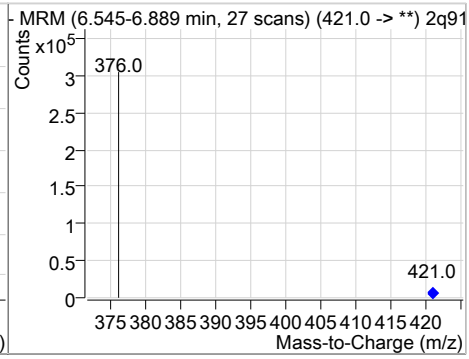




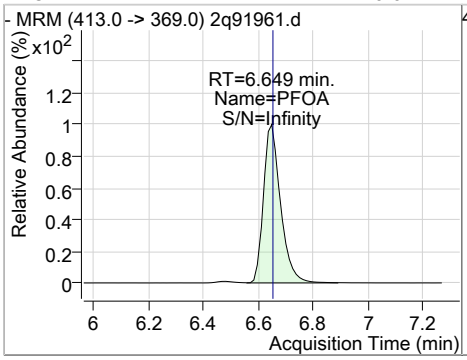
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.02	6.65	0.00	231965				

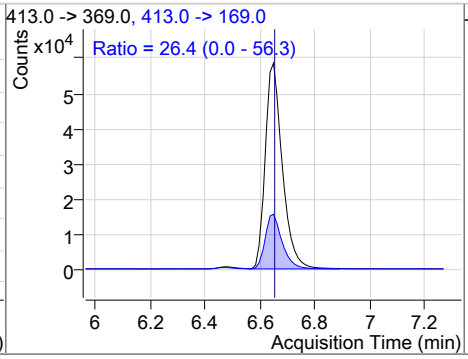


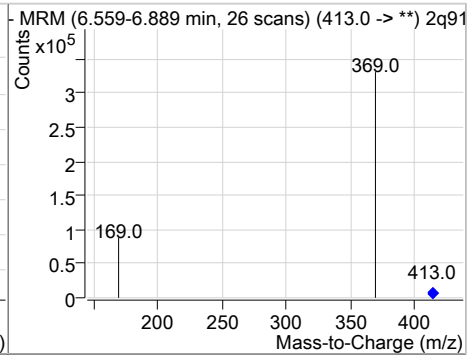




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.01	6.65	0.00	252147	413.0 -> 169.0	26.4	0.0	56.3

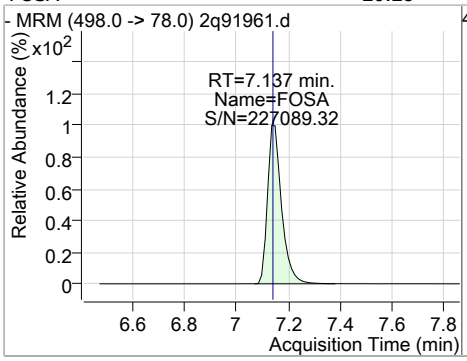


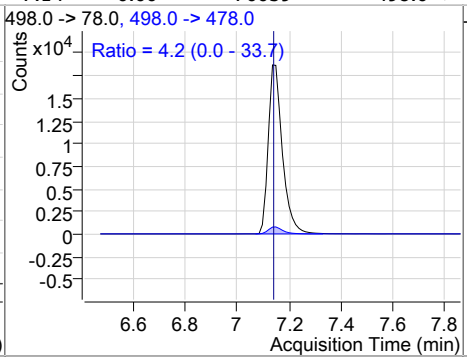


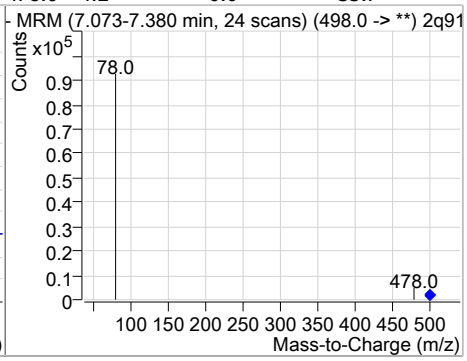


Perfluorinated Compounds by LC/MS/MS

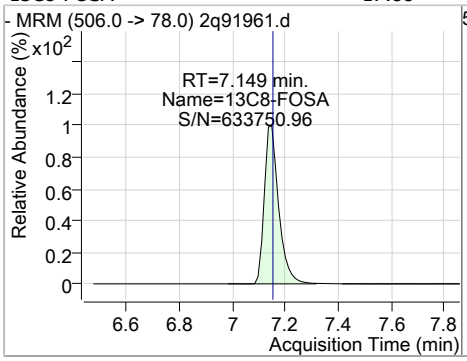
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.28	7.14	0.00	70059	498.0 -> 478.0	4.2	0.0	33.7

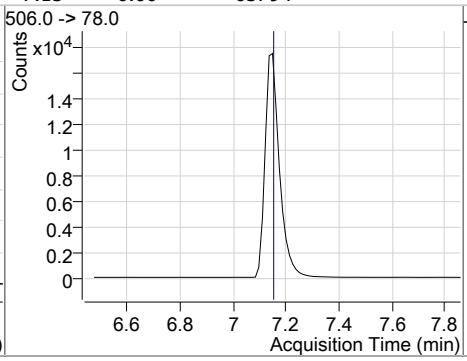


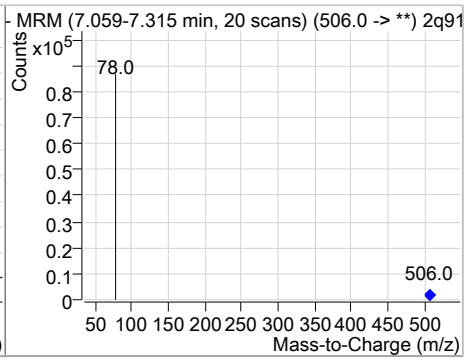




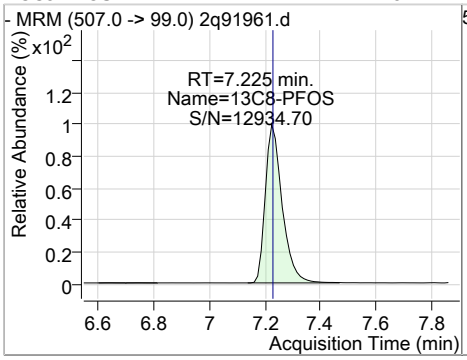
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.88	7.15	0.00	65794				

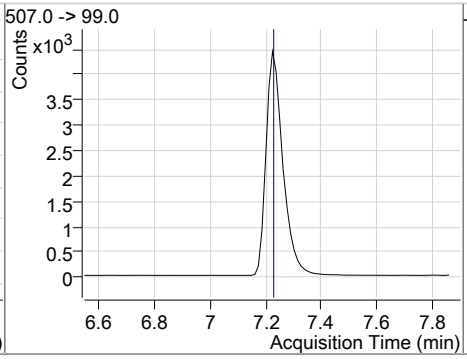


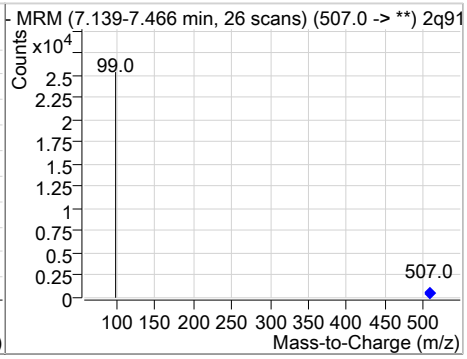




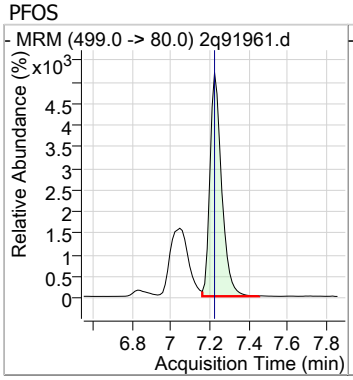
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.84	7.22	0.00	18511				

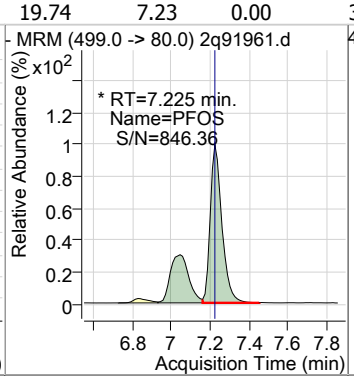


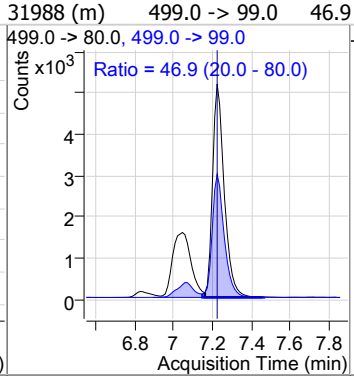


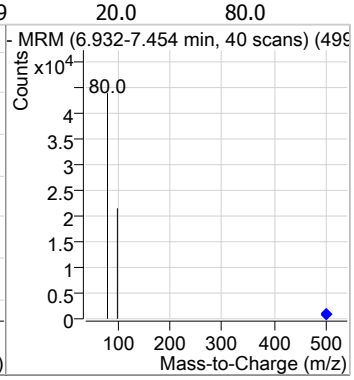


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.74	7.23	0.00	31988 (m)	499.0 -> 99.0	46.9	20.0	80.0



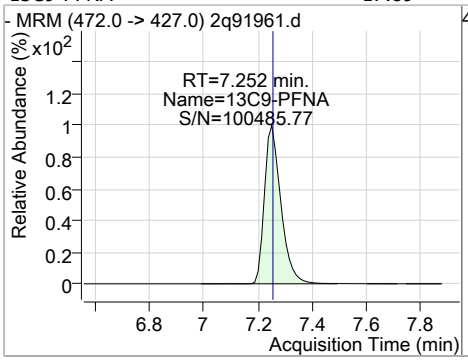


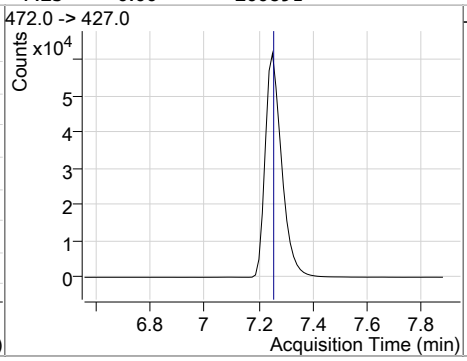


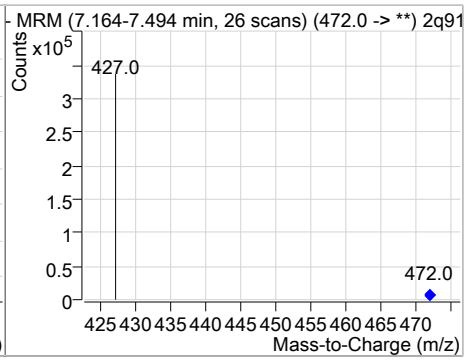


Perfluorinated Compounds by LC/MS/MS

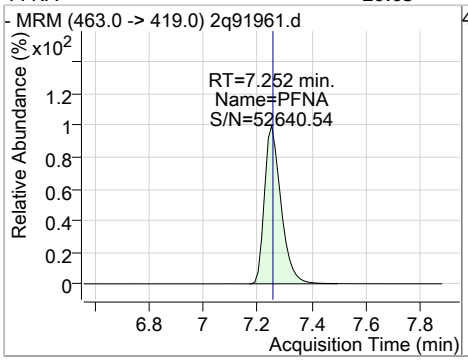
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.89	7.25	0.00	260891				

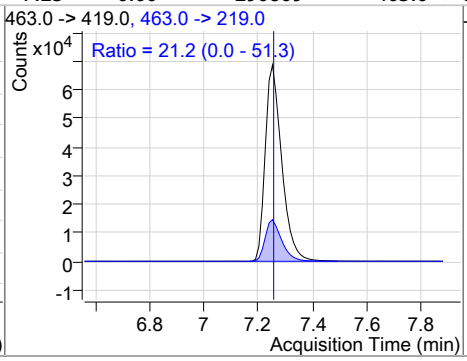


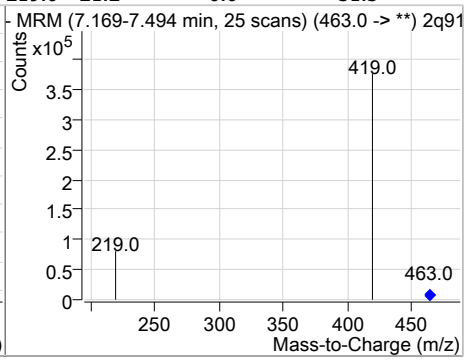




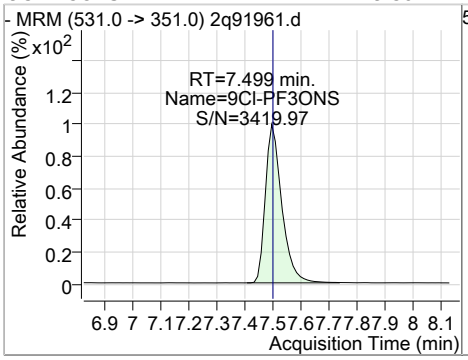
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.05	7.25	0.00	290869	463.0 -> 219.0	21.2	0.0	51.3

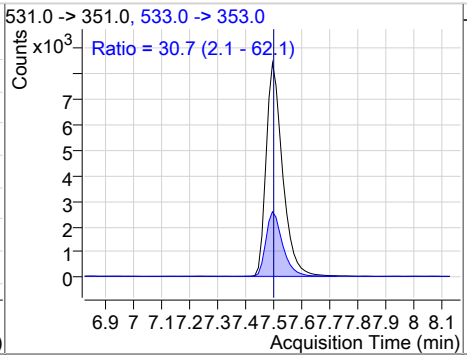


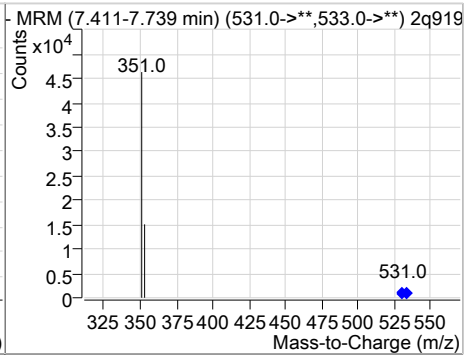




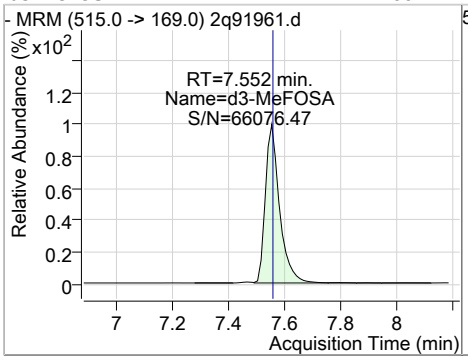
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	19.38	7.50	0.00	34217	533.0 -> 353.0	30.7	2.1	62.1

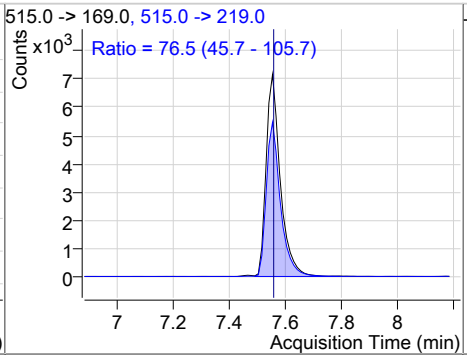


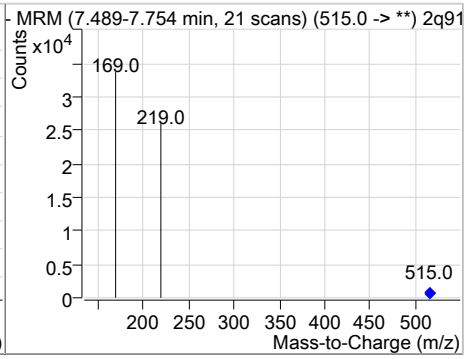




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.88	7.55	0.00	25030	515.0 -> 219.0	76.5	45.7	105.7

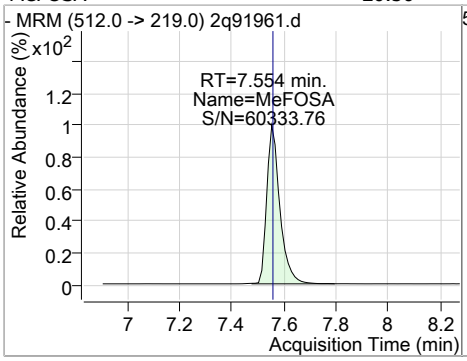


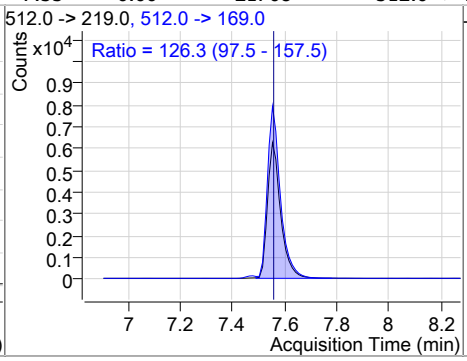


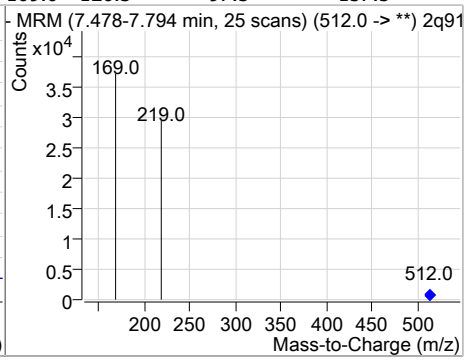


Perfluorinated Compounds by LC/MS/MS

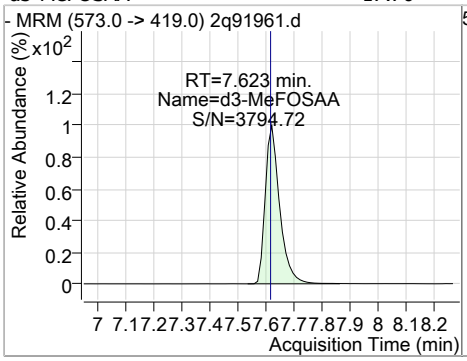
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	20.56	7.55	0.00	21708	512.0 -> 169.0	126.3	97.5	157.5

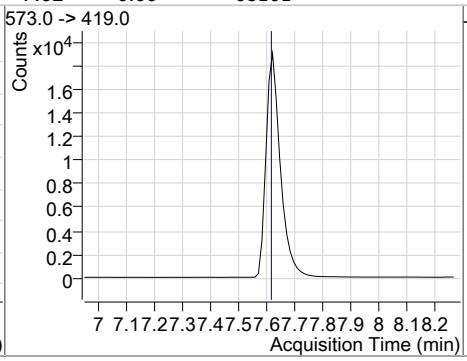


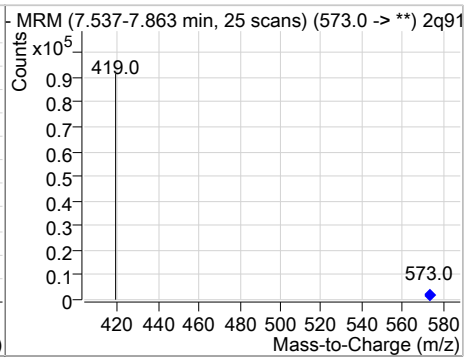




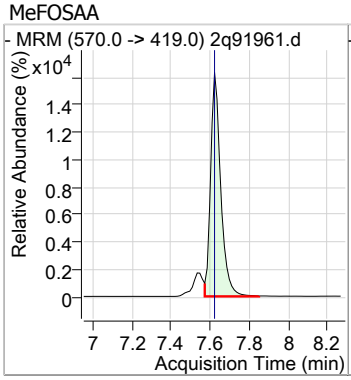
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.76	7.62	0.00	68101				

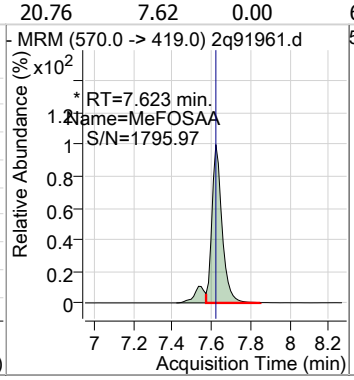


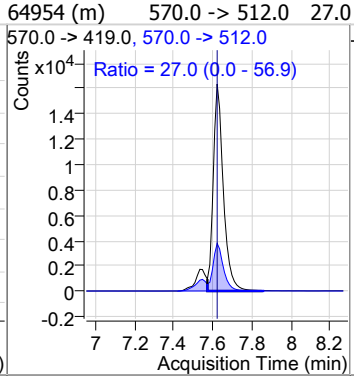


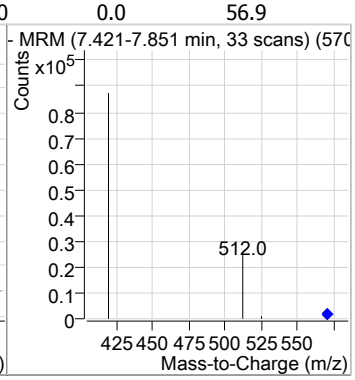


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.76	7.62	0.00	64954 (m)	570.0 -> 512.0	27.0	0.0	56.9

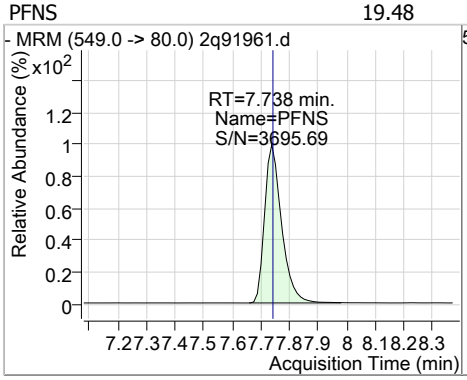


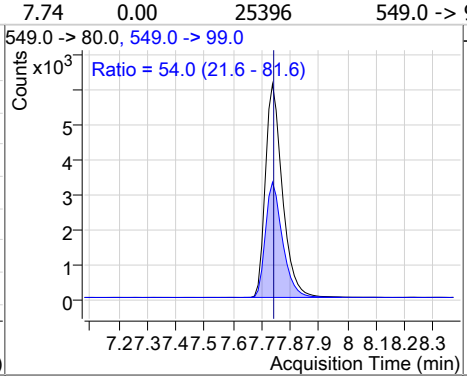


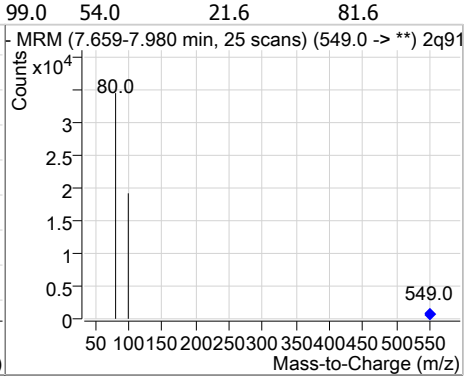




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	19.48	7.74	0.00	25396	549.0 -> 99.0	54.0	21.6	81.6

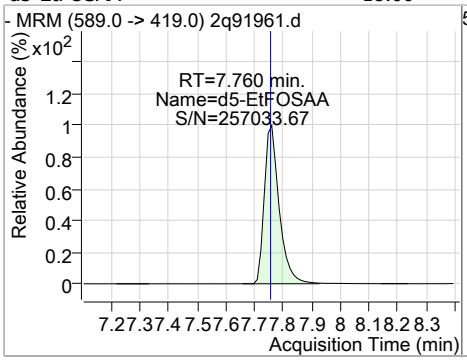


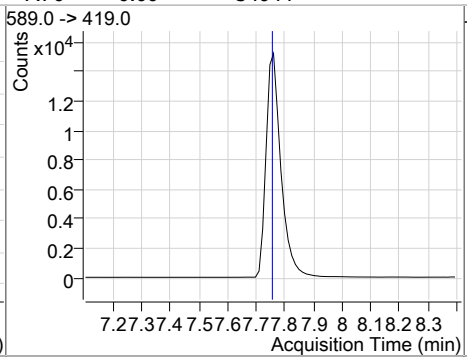


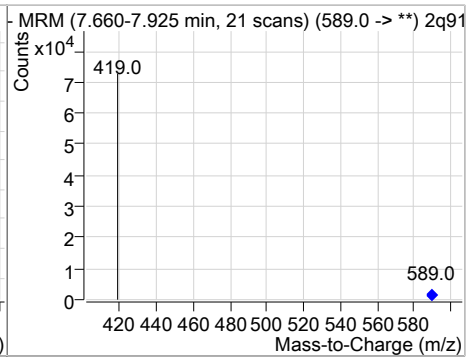


Perfluorinated Compounds by LC/MS/MS

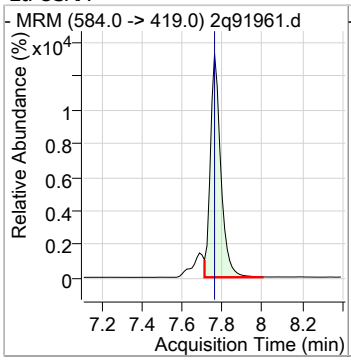
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.00	7.76	0.00	54644				

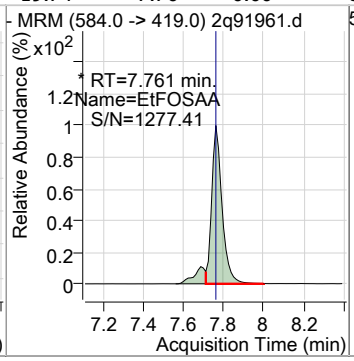


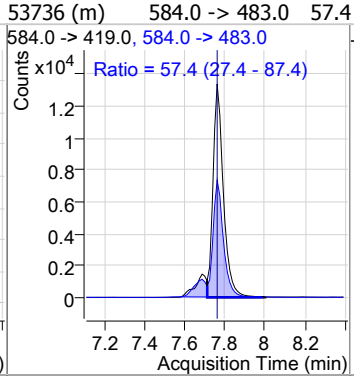


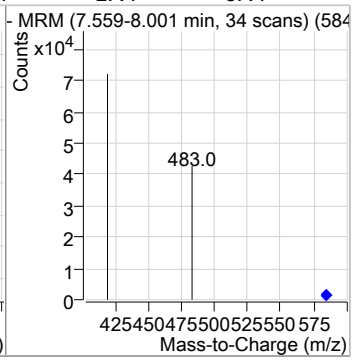


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.74	7.76	0.00	53736 (m)	584.0 -> 483.0	57.4	27.4	87.4

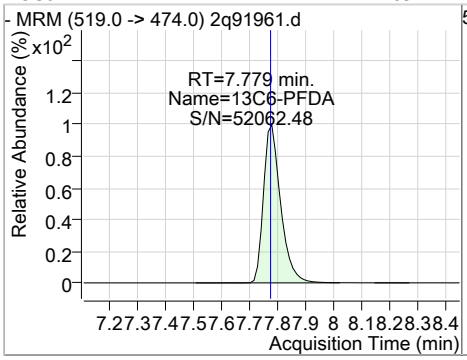


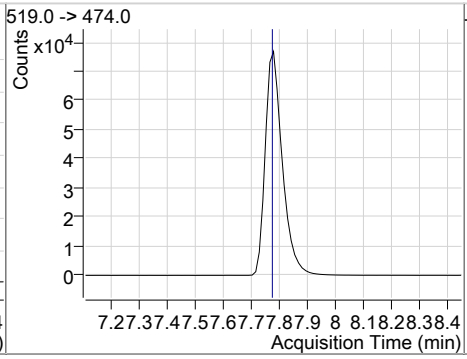


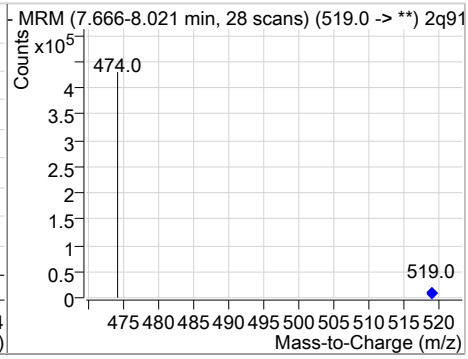




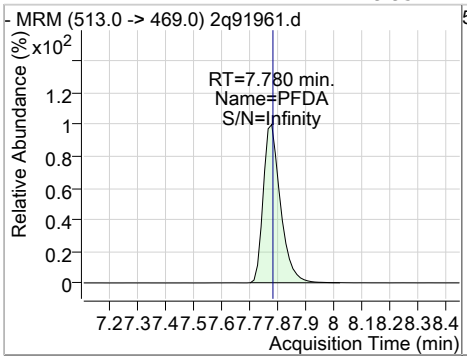
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.89	7.78	0.00	325834				

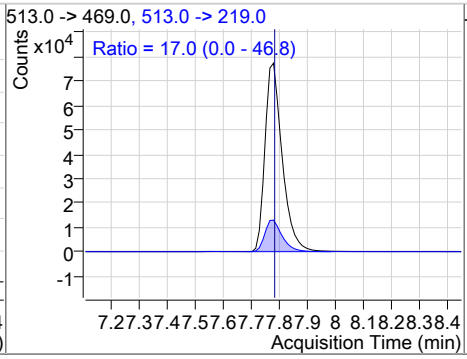


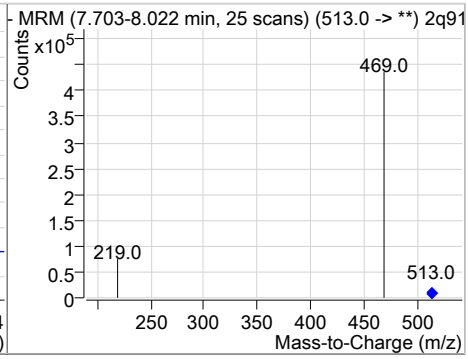




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.95	7.78	0.00	329397	513.0 -> 219.0	17.0	0.0	46.8

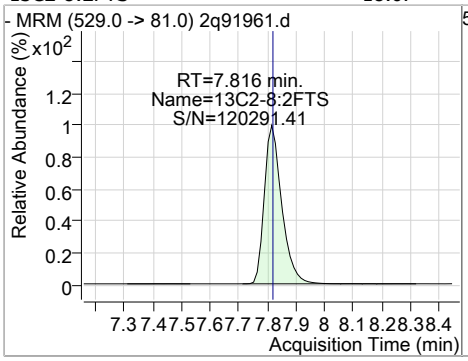


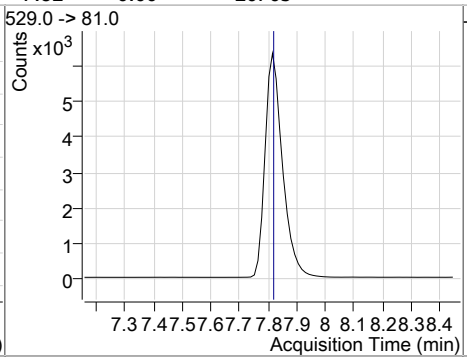


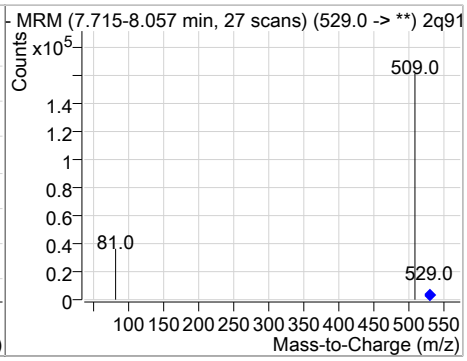


Perfluorinated Compounds by LC/MS/MS

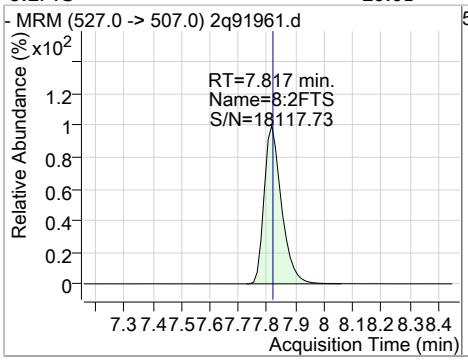
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.07	7.82	0.00	26765				

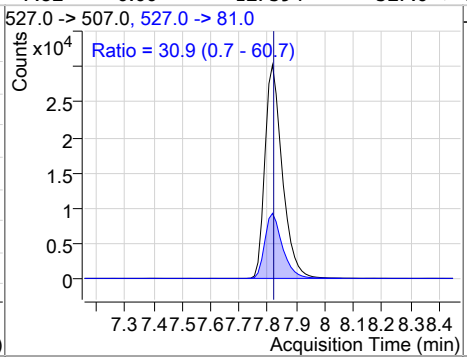


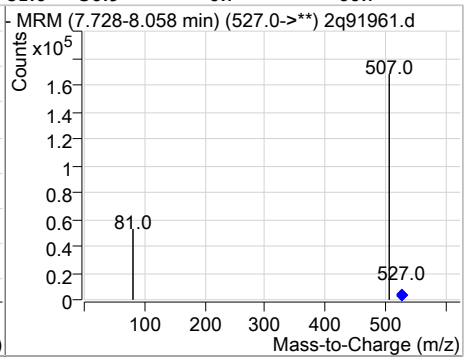




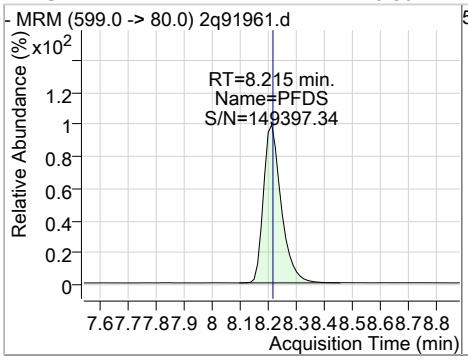
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.01	7.82	0.00	127594	527.0 -> 81.0	30.9	0.7	60.7

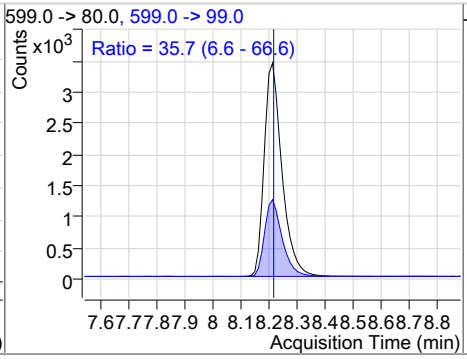


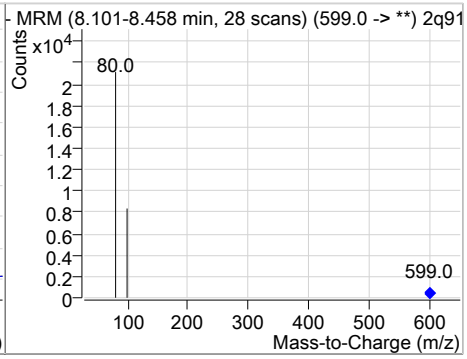




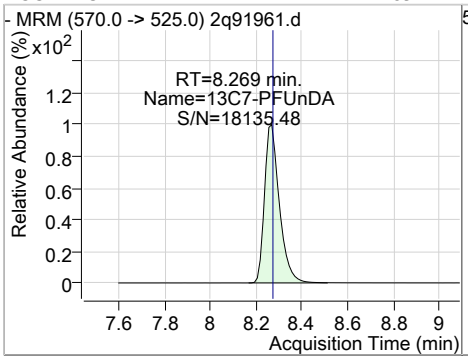
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.36	8.22	0.00	15033	599.0 -> 99.0	35.7	6.6	66.6

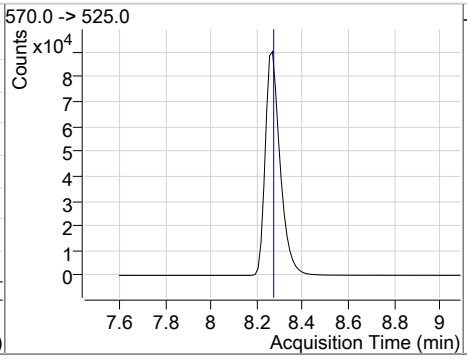


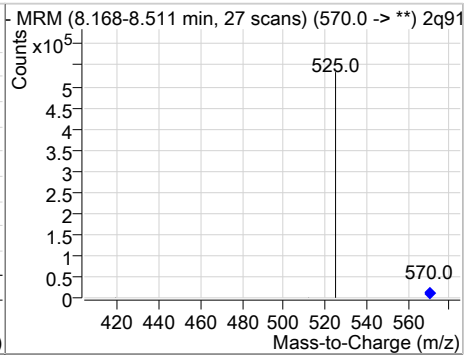




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.89	8.27	0.00	404861				

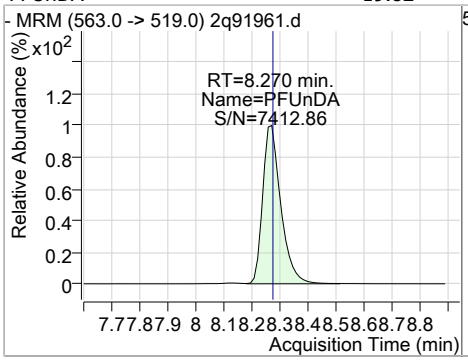


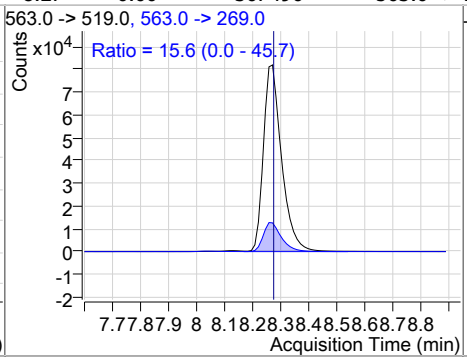


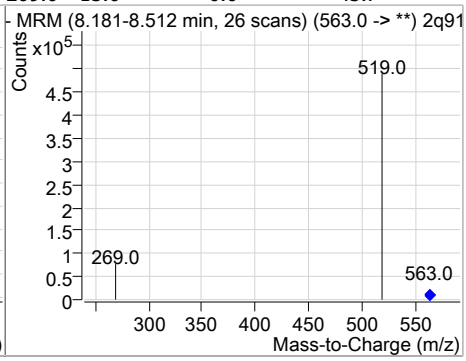


Perfluorinated Compounds by LC/MS/MS

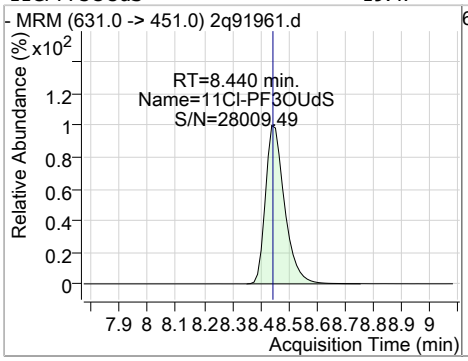
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.82	8.27	0.00	367496	563.0 -> 269.0	15.6	0.0	45.7

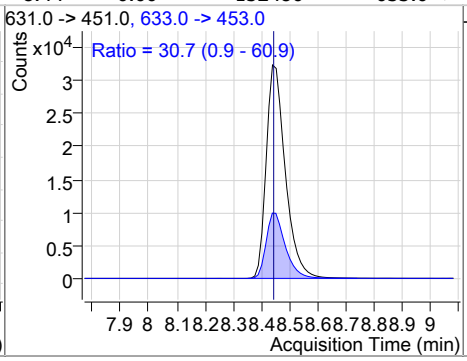


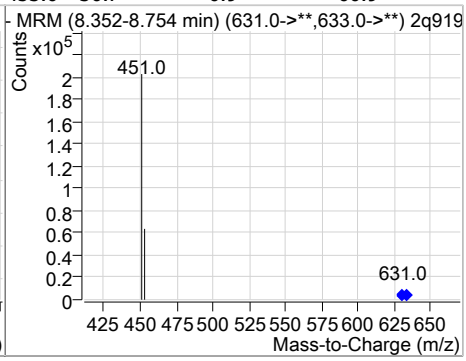




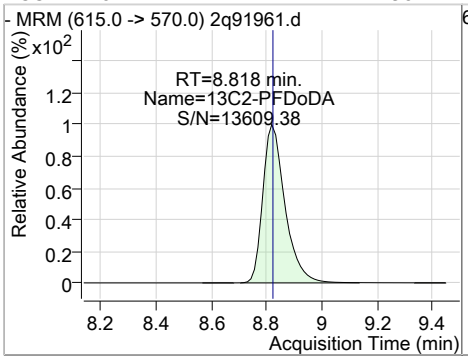
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	19.47	8.44	0.00	152486	633.0 -> 453.0	30.7	0.9	60.9

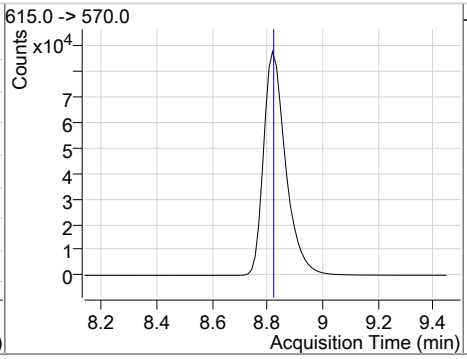


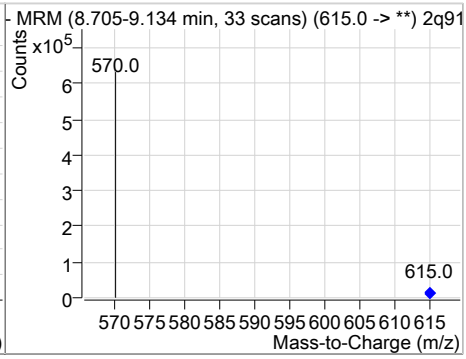




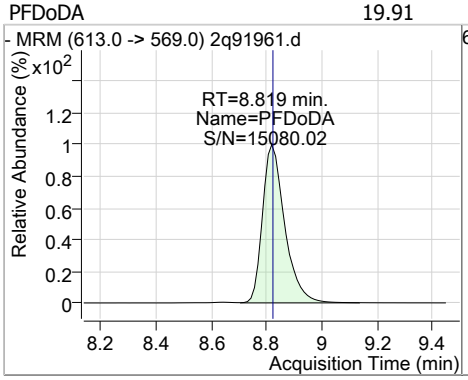
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.98	8.82	0.00	485739				

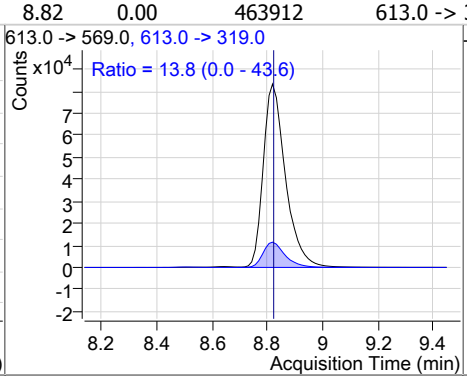


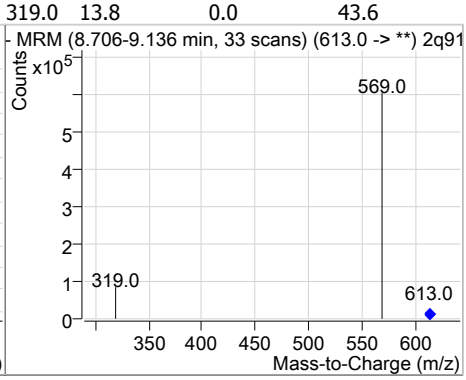




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.91	8.82	0.00	463912	613.0 -> 319.0	13.8	0.0	43.6

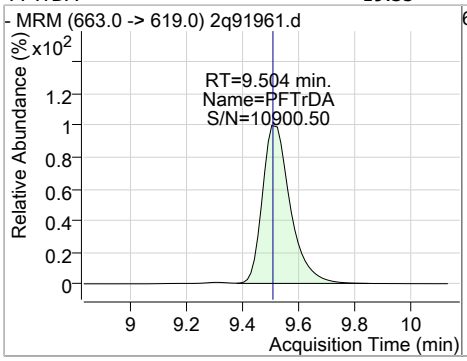


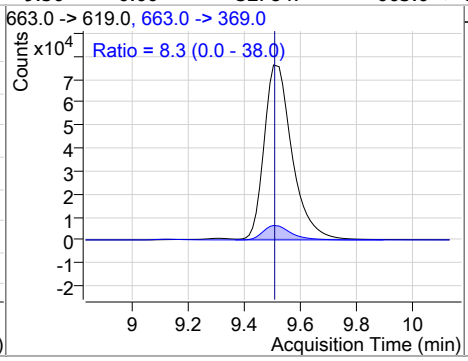


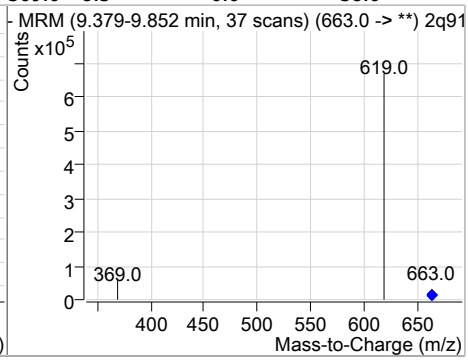


Perfluorinated Compounds by LC/MS/MS

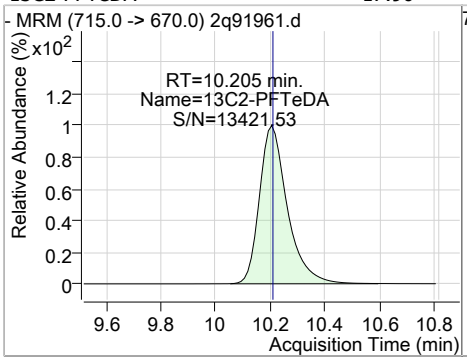
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.35	9.50	0.00	527847	663.0 -> 369.0	8.3	0.0	38.0

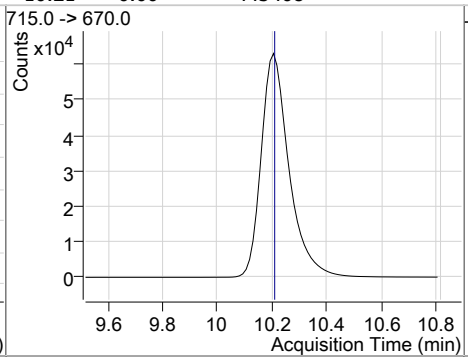


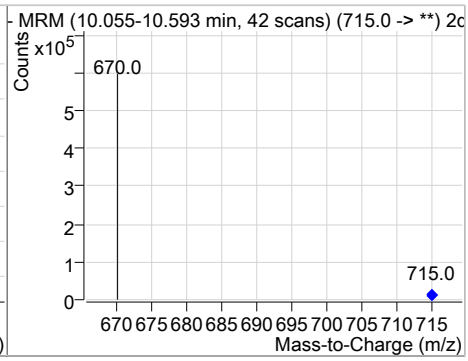




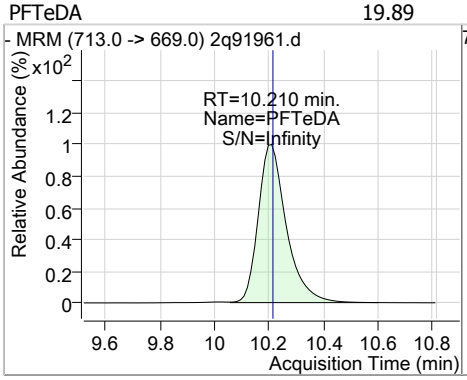
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.90	10.21	0.00	445468				

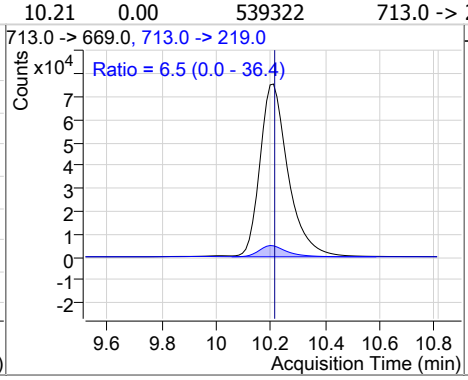


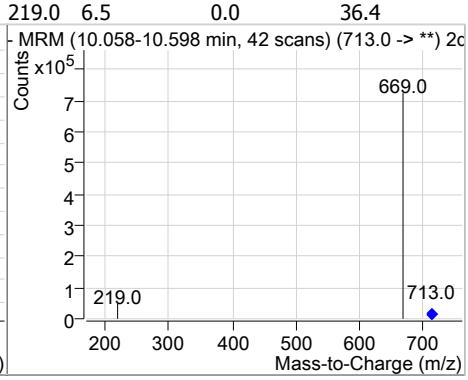




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.89	10.21	0.00	539322	713.0 -> 219.0	6.5	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-ICC1287
Lab FileID: 2Q91961.D
Injection Time: 05/27/22 13:38
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91962.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 1:57:16 PM
Sample Name : ic1287-50
Vial : P1-A8
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

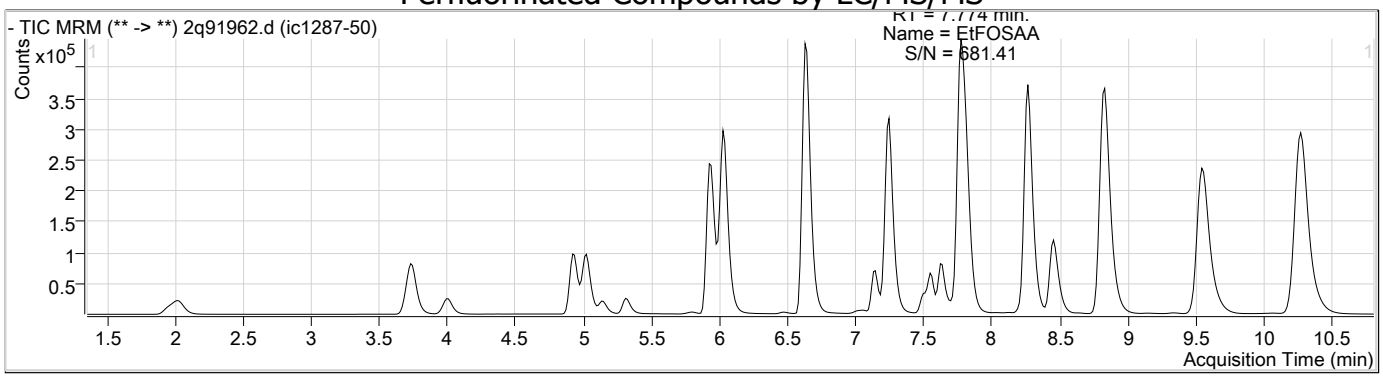
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	59484	20.00	µg/L	0.000
M4-PFBA	2.014	217.0 -> 172.0	79332	20.00	µg/L	0.000
M5-PFPeA	3.736	268.0 -> 223.0	93562	20.00	µg/L	0.000
M5-PFHxA	5.027	318.0 -> 273.0	138262	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	188442	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	259290	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	294792	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	363291	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	456629	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	568220	20.00	µg/L	0.014
M2-PFTeDA	10.268	715.0 -> 670.0	513890	20.00	µg/L	0.063
M8-FOSA	7.149	506.0 -> 78.0	72200	20.00	µg/L	0.000
M3-PFBS	4.004	302.0 -> 99.0	10442	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	14158	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	20891	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	9477	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	20551	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	29919	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	79182	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	5295	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	27299	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	9477	20.37	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
13C2-6:2FTS	6.634	429.0 -> 81.0	20551	19.87	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C2-8:2FTS	7.816	529.0 -> 81.0	29919	20.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C2-PFDoDA	8.832	615.0 -> 570.0	568220	21.04	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C2-PFTeDA	10.268	715.0 -> 670.0	513890	20.65	µg/L	0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C3-PFBS	4.004	302.0 -> 99.0	10442	20.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C3-PFHxS	5.967	402.0 -> 99.0	14158	19.86	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C4-PFBA	2.014	217.0 -> 172.0	79332	20.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C4-PFHpA	5.929	367.0 -> 322.0	188442	20.30	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
d5-EtFOSAA	7.760	589.0 -> 419.0	59484	19.60	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C5-PFHxA	5.027	318.0 -> 273.0	138262	20.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.4%		
13C5-PFPeA	3.736	268.0 -> 223.0	93562	20.53	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

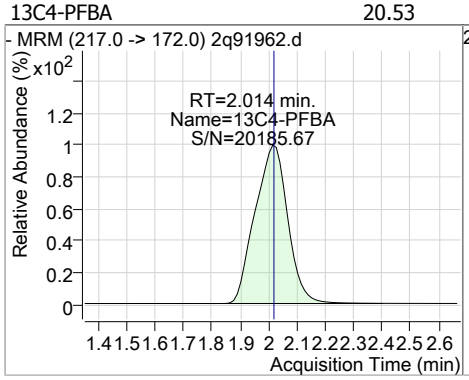
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C6-PFDA	7.779	519.0 -> 474.0	363291	19.95 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C7-PFUnDA	8.269	570.0 -> 525.0	456629	20.18 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C8-FOSA	7.149	506.0 -> 78.0	72200	19.62 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C8-PFOA	6.649	421.0 -> 376.0	259290	20.14 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C8-PFOS	7.225	507.0 -> 99.0	20891	20.13 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C9-PFNA	7.252	472.0 -> 427.0	294792	20.21 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.1%		
d3-MeFOSAA	7.623	573.0 -> 419.0	79182	20.65 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C3-HFPO-DA	5.319	287.0 -> 169.0	5295	20.33 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
d3-MeFOSA	7.552	515.0 -> 169.0	27299	19.50 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%		
Target Compounds						QValue
4:2FTS	4.925	327.0 -> 307.0	239810	48.30 µg/L		100
6:2FTS	6.635	427.0 -> 407.0	370564	48.91 µg/L		100
8:2FTS	7.817	527.0 -> 507.0	345539	48.49 µg/L		99
EtFOSAA	7.774	584.0 -> 419.0	143700	48.49 µg/L	m	97
FOSA	7.150	498.0 -> 78.0	179480	47.34 µg/L		99
MeFOSAA	7.636	570.0 -> 419.0	175036	48.12 µg/L	m	100
PFBA	2.021	213.0 -> 169.0	99005	48.67 µg/L		100
PFBS	3.994	299.0 -> 80.0	85312	49.00 µg/L		100
PFDA	7.780	513.0 -> 469.0	908865	49.37 µg/L		99
PFDoDA	8.833	613.0 -> 569.0	1322003	48.50 µg/L		99
PFDS	8.215	599.0 -> 80.0	40929	49.14 µg/L		100
PFHpA	5.930	363.0 -> 319.0	757793	49.19 µg/L		99
PFHpS	6.645	449.0 -> 80.0	83644	50.27 µg/L		99
PFHxA	5.028	313.0 -> 269.0	249460	48.76 µg/L		100
PFHxS	5.967	399.0 -> 80.0	88588	49.86 µg/L	m	98
PFNA	7.252	463.0 -> 419.0	795669	48.54 µg/L		100
PFNS	7.738	549.0 -> 80.0	70309	47.79 µg/L		97
PFOA	6.649	413.0 -> 369.0	692173	49.15 µg/L		100
PFOS	7.225	499.0 -> 80.0	87756	47.99 µg/L	m	97
PFPeA	3.739	263.0 -> 219.0	351959	48.85 µg/L		100
PFPeS	5.145	349.0 -> 80.0	58171	48.85 µg/L		99
PFTeDA	10.272	713.0 -> 669.0	1542793	49.31 µg/L		100
PFTrDA	9.549	663.0 -> 619.0	1529291	47.91 µg/L		99
PFUnDA	8.270	563.0 -> 519.0	1008097	48.21 µg/L		100
11Cl-PF3OUdS	8.453	631.0 -> 451.0	423301	46.21 µg/L		100
9Cl-PF3ONS	7.499	531.0 -> 351.0	94441	47.98 µg/L		98
ADONA	6.032	377.0 -> 251.0	937912	48.13 µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	94450	49.48 µg/L		99
MeFOSA	7.566	512.0 -> 219.0	57066	49.56 µg/L		99

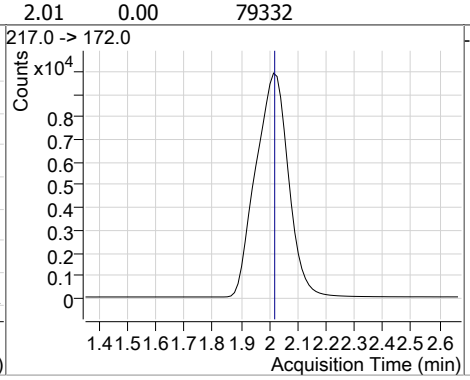
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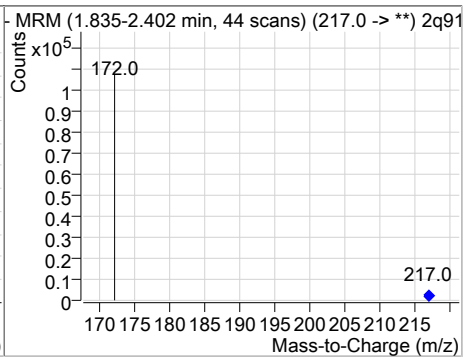
Perfluorinated Compounds by LC/MS/MS



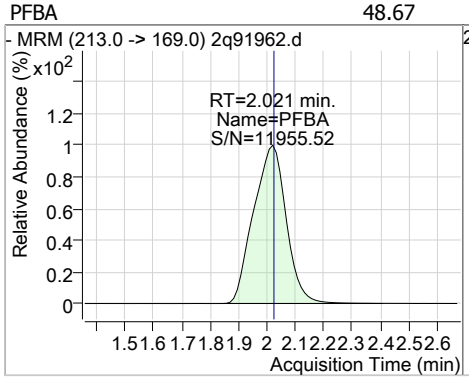
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.53	2.01	0.00	79332				

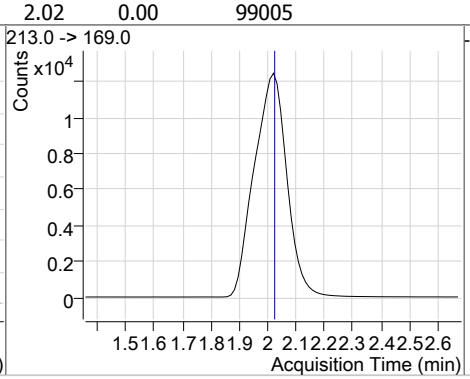


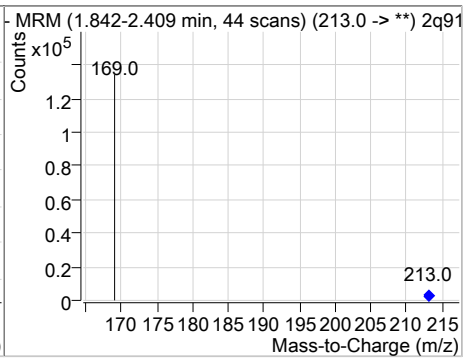




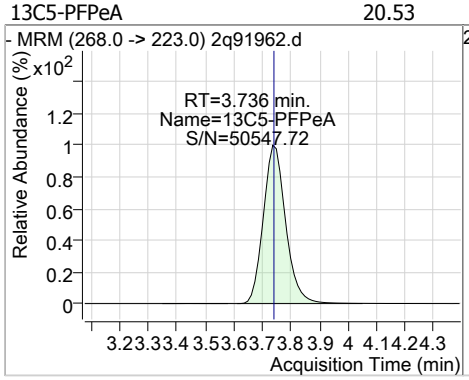
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	48.67	2.02	0.00	99005				

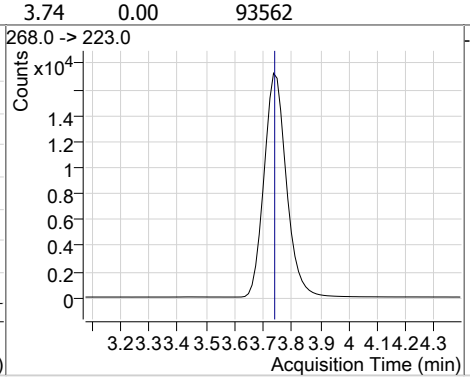


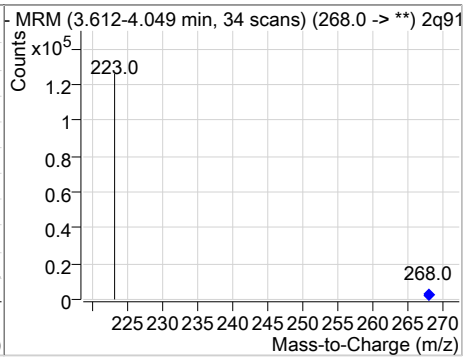




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.53	3.74	0.00	93562				

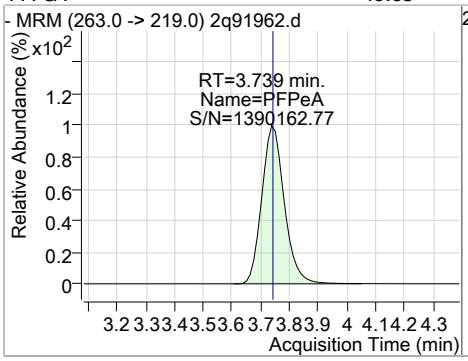


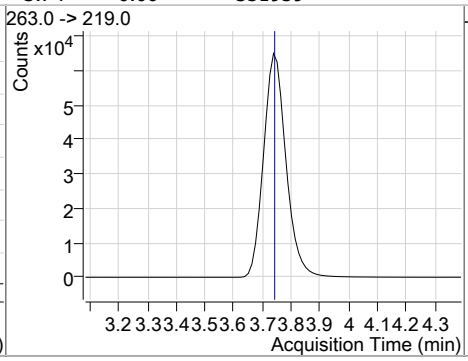


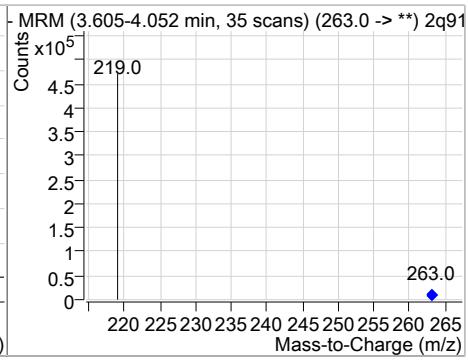


Perfluorinated Compounds by LC/MS/MS

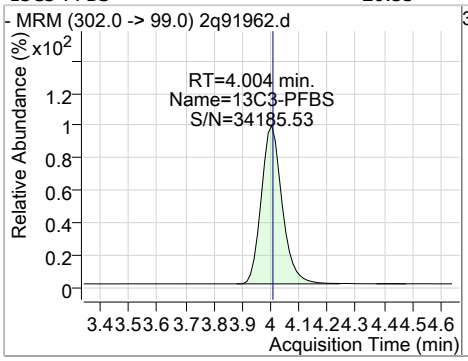
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	48.85	3.74	0.00	351959				

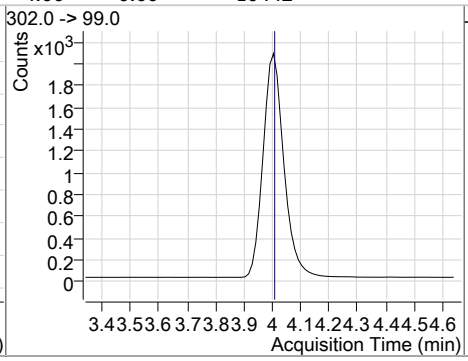


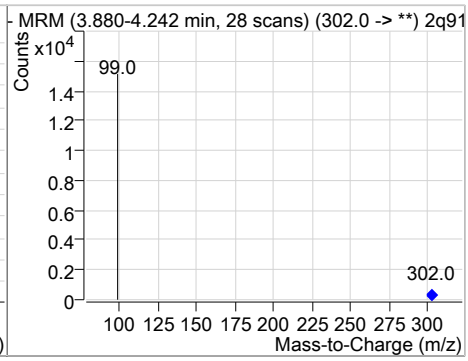




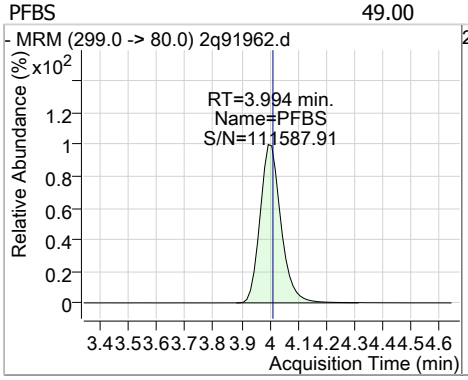
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.53	4.00	0.00	10442				

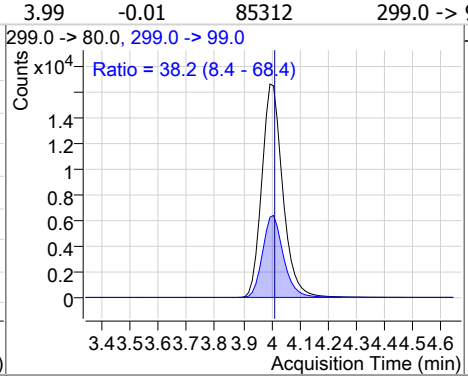


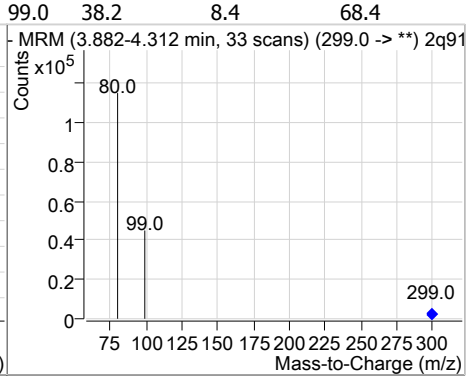




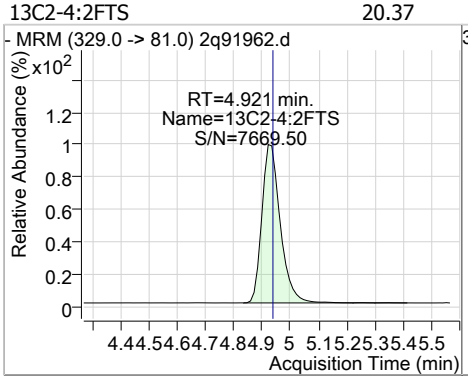
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	49.00	3.99	-0.01	85312	299.0 -> 99.0	38.2	8.4	68.4

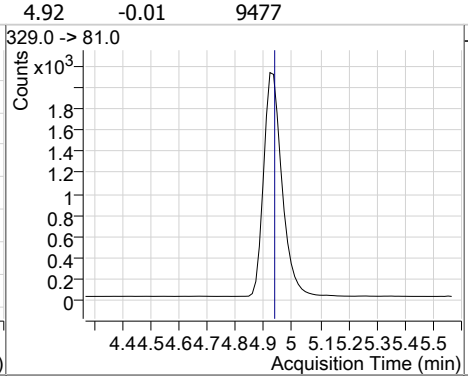


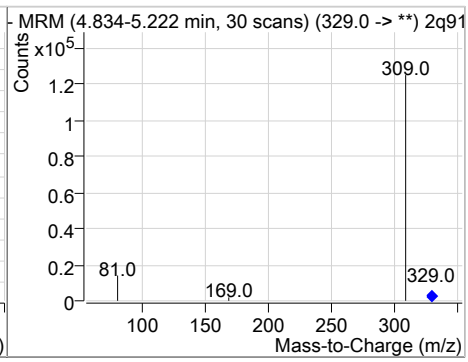




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.37	4.92	-0.01	9477				

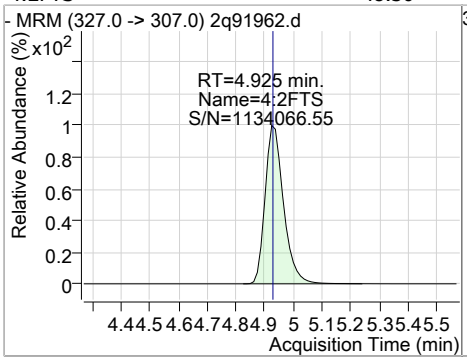


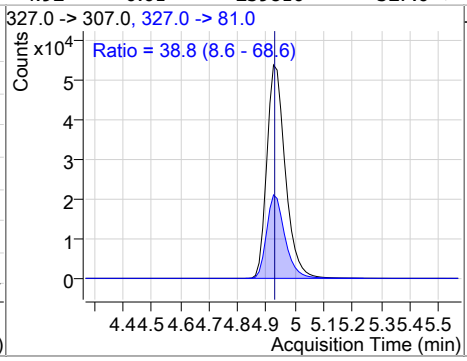


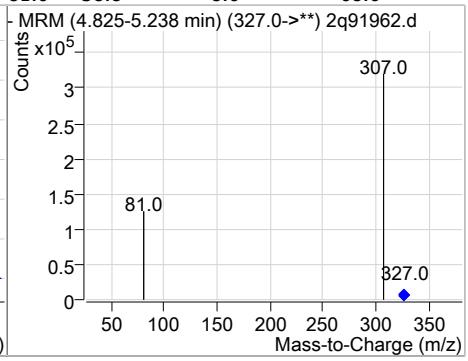


Perfluorinated Compounds by LC/MS/MS

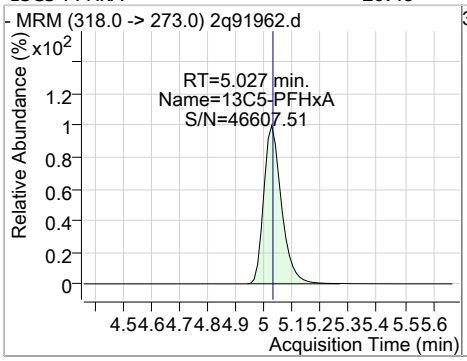
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	48.30	4.92	-0.01	239810	327.0 -> 81.0	38.8	8.6	68.6

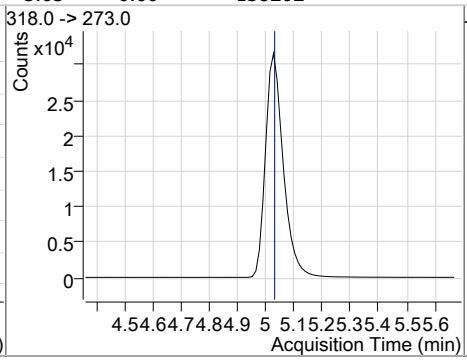


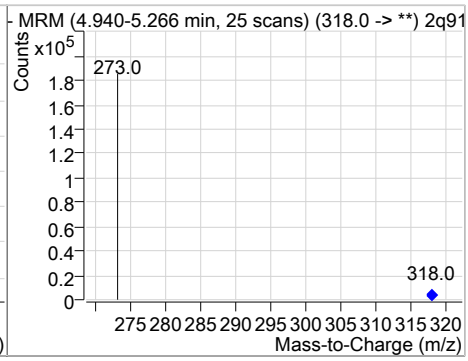




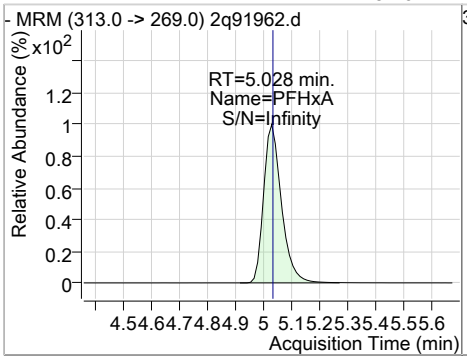
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.48	5.03	0.00	138262				

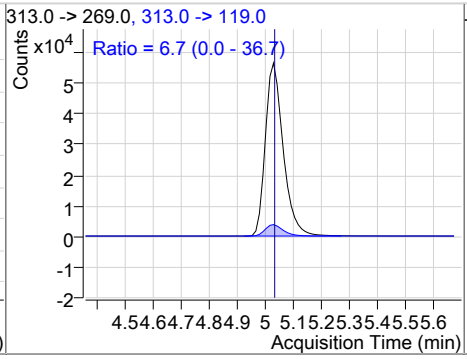


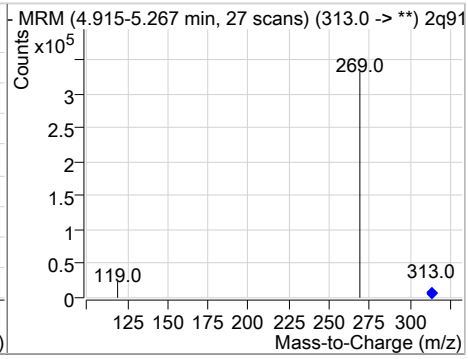




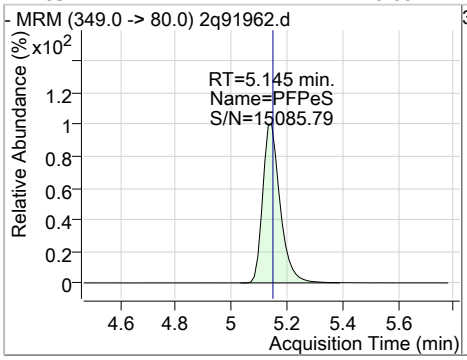
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	48.76	5.03	0.00	249460	313.0 -> 119.0	6.7	0.0	36.7

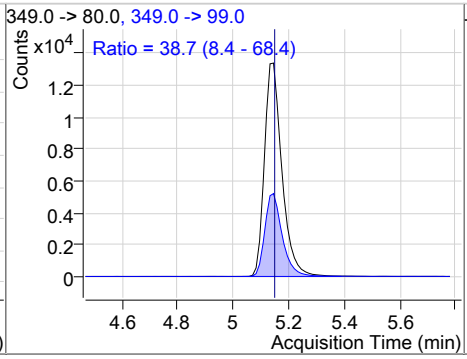


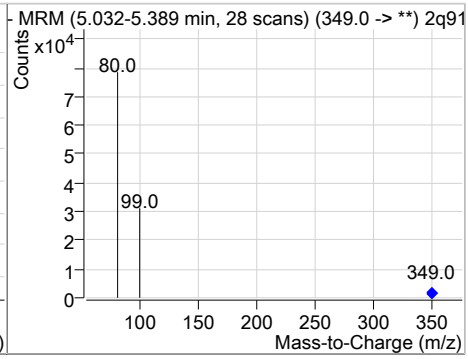




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	48.85	5.15	0.00	58171	349.0 -> 99.0	38.7	8.4	68.4

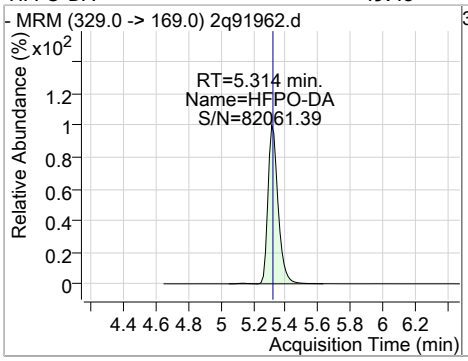


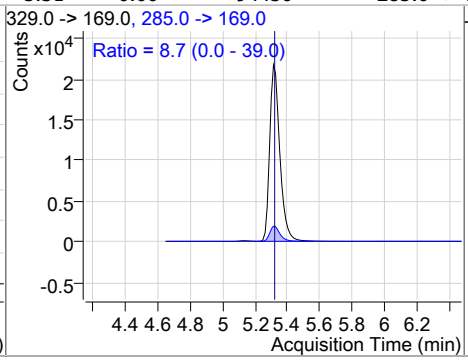


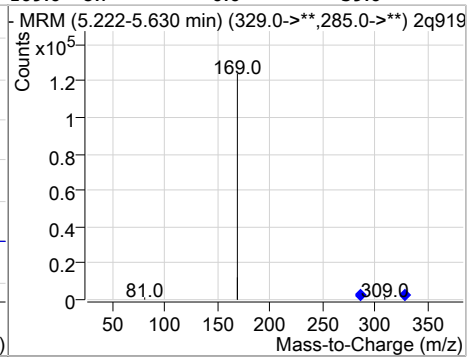


Perfluorinated Compounds by LC/MS/MS

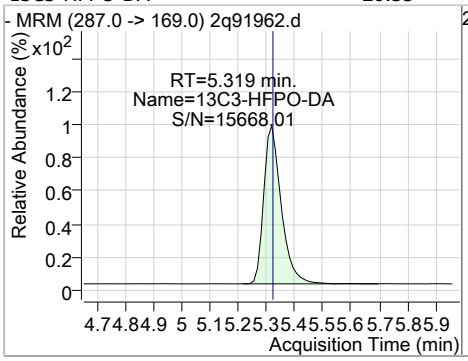
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	49.48	5.31	0.00	94450	285.0 -> 169.0	8.7	0.0	39.0

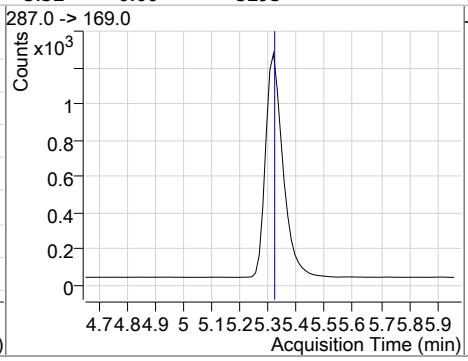


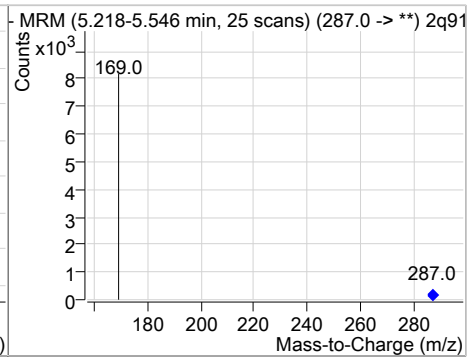




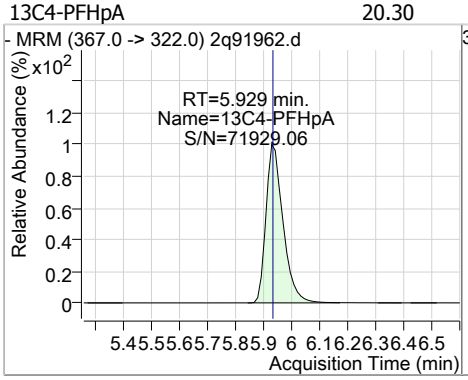
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.33	5.32	0.00	5295				

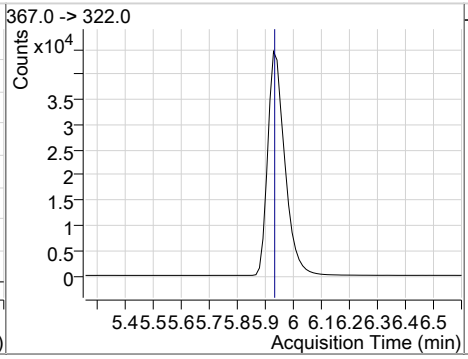


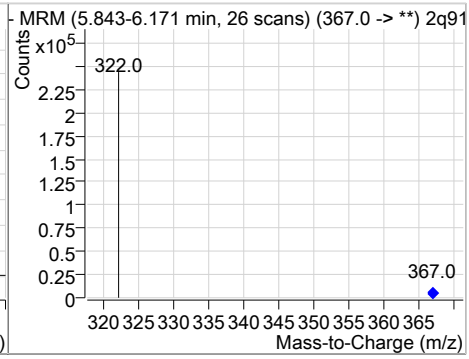




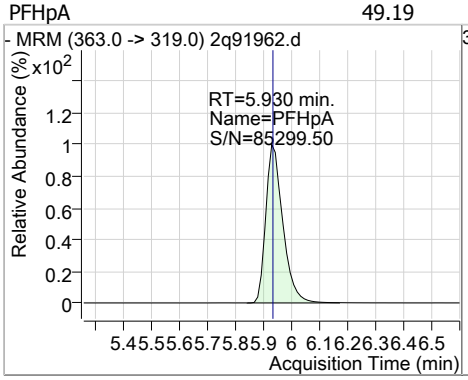
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.30	5.93	0.00	188442				

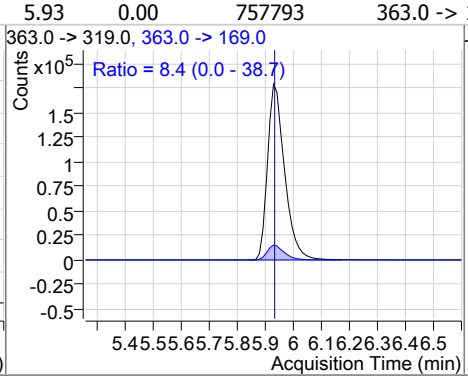


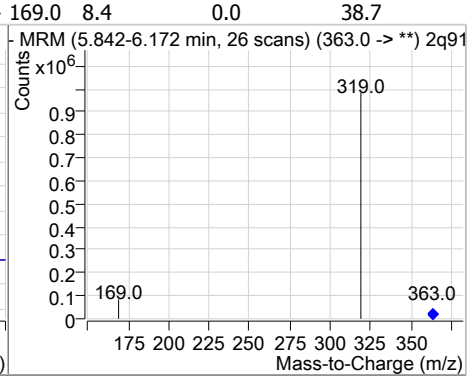




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	49.19	5.93	0.00	757793	363.0 -> 169.0	8.4	0.0	38.7

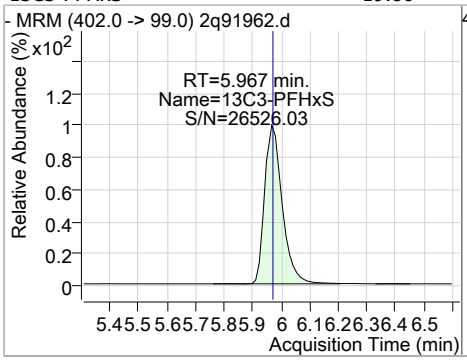


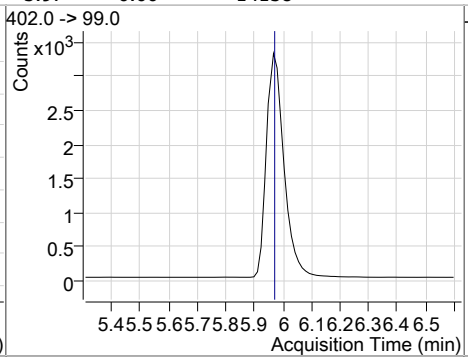


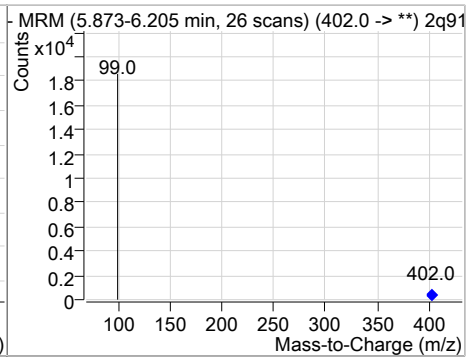


Perfluorinated Compounds by LC/MS/MS

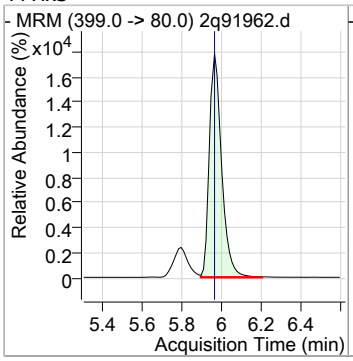
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.86	5.97	0.00	14158				

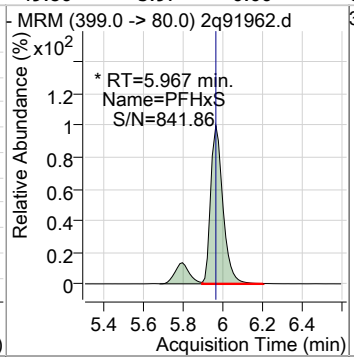


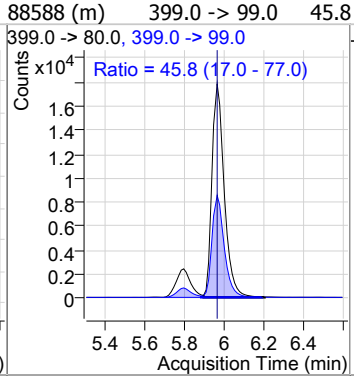


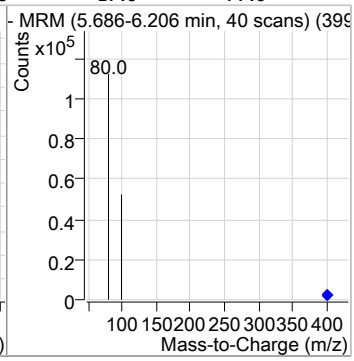


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	49.86	5.97	0.00	88588 (m)	399.0 -> 99.0	45.8	17.0	77.0

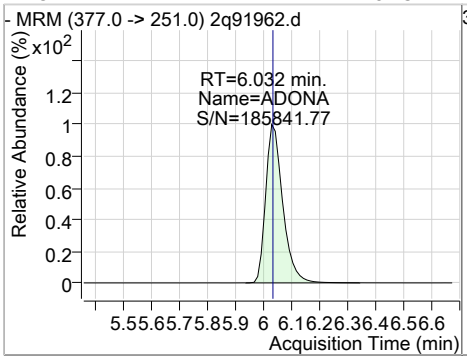


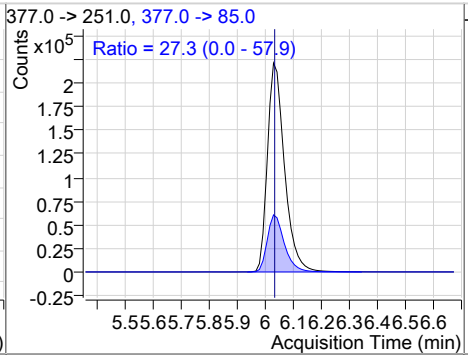


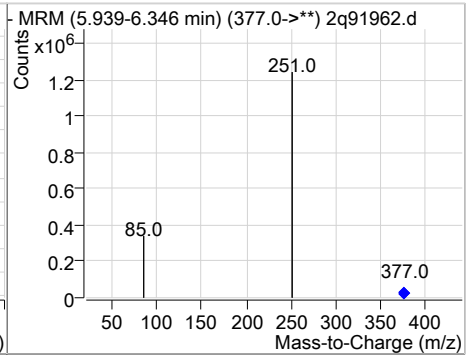




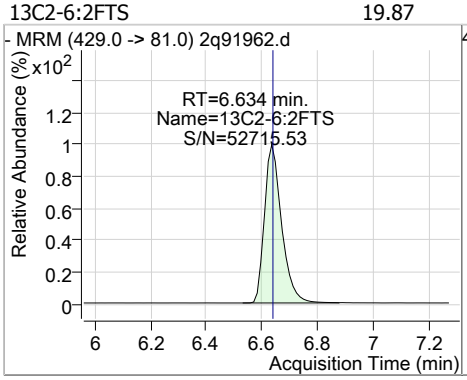
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	48.13	6.03	0.00	937912	377.0 -> 85.0	27.3	0.0	57.9

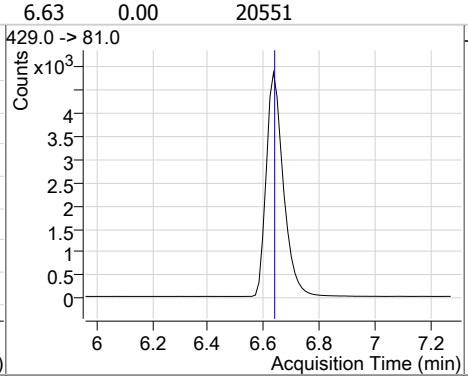


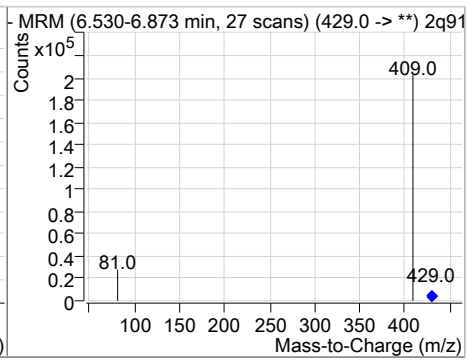




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.87	6.63	0.00	20551				

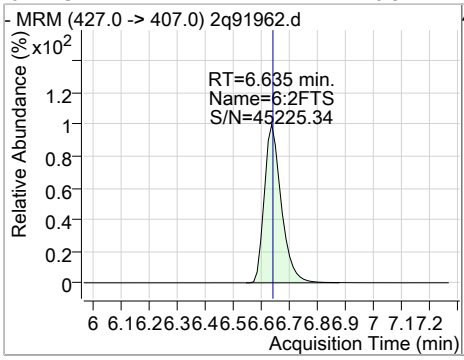


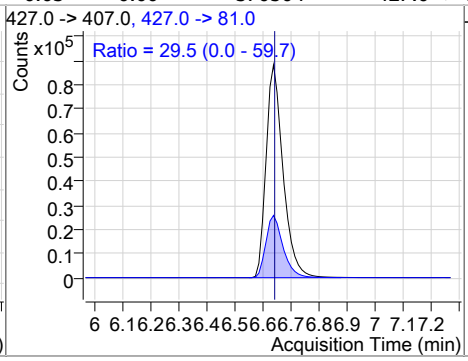


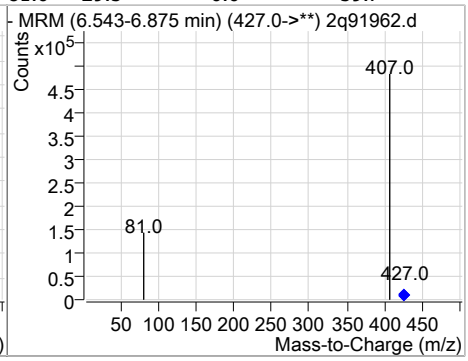


Perfluorinated Compounds by LC/MS/MS

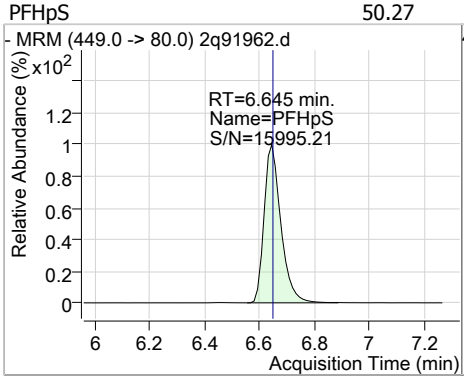
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	48.91	6.63	0.00	370564	427.0 -> 81.0	29.5	0.0	59.7

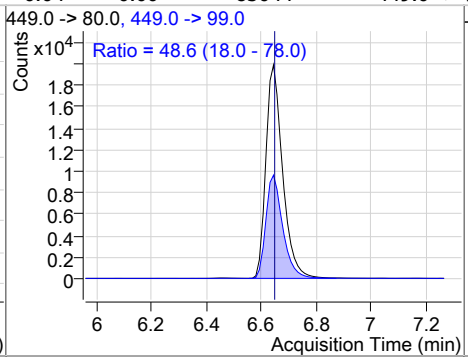


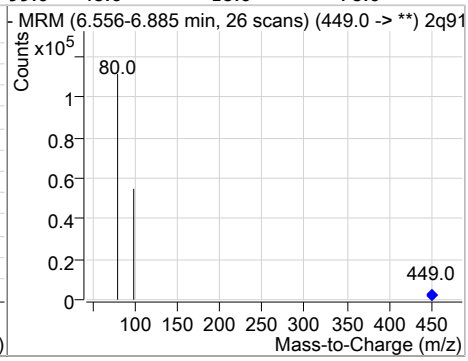




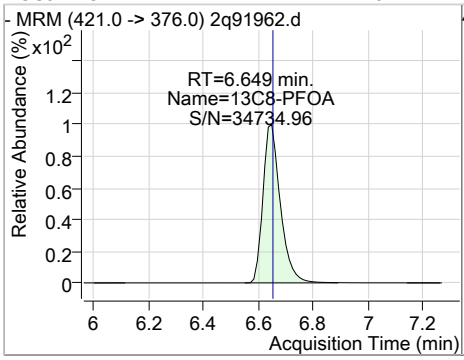
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	50.27	6.64	0.00	83644	449.0 -> 99.0	48.6	18.0	78.0

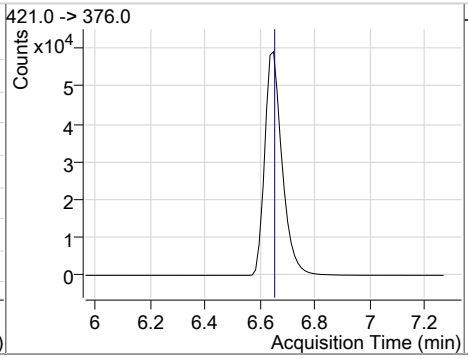


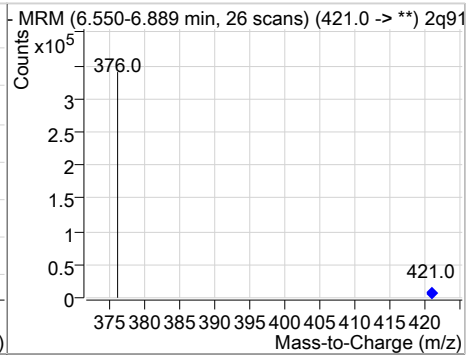




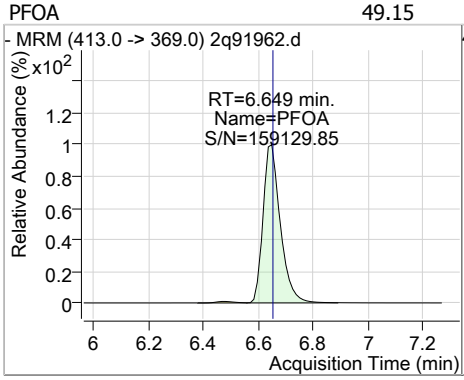
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.14	6.65	0.00	259290				

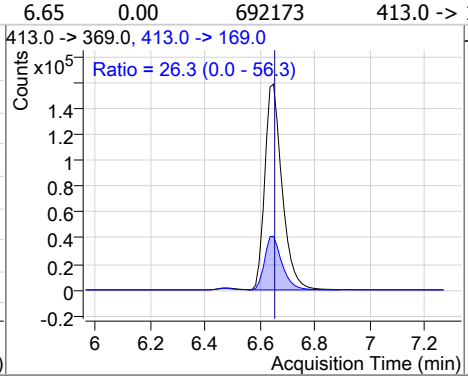


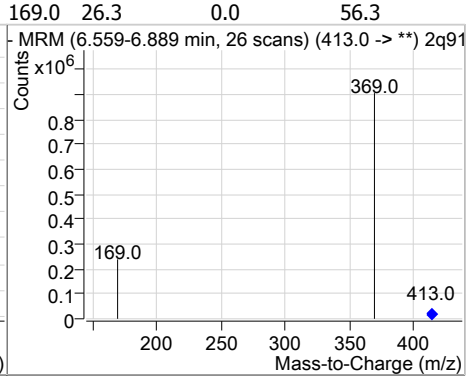




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	49.15	6.65	0.00	692173	413.0 -> 169.0	26.3	0.0	56.3

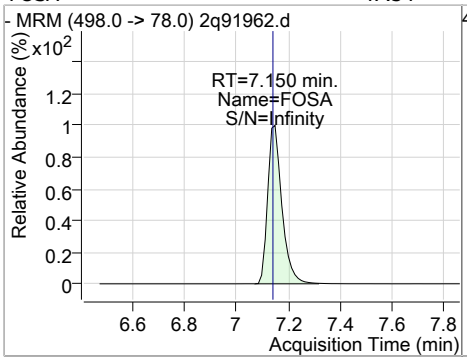


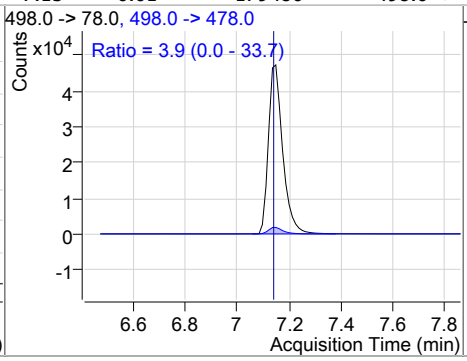


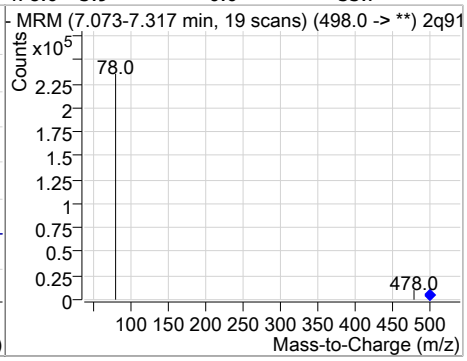


Perfluorinated Compounds by LC/MS/MS

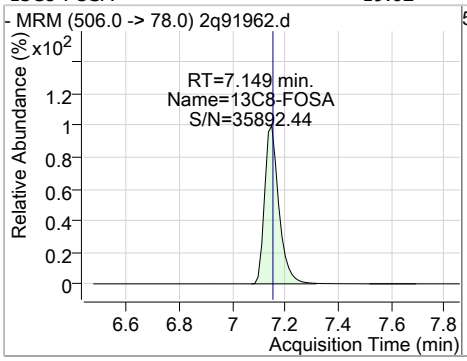
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	47.34	7.15	0.01	179480	498.0 -> 478.0	3.9	0.0	33.7

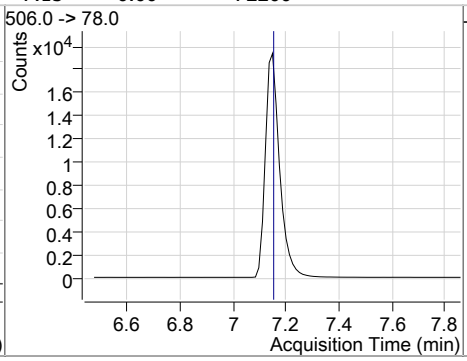


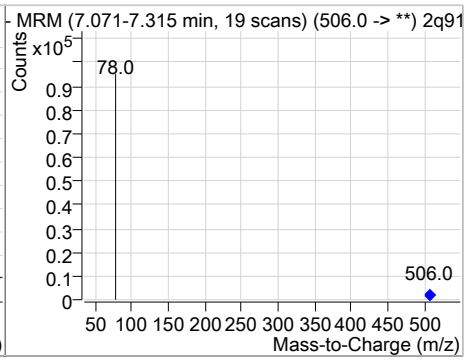




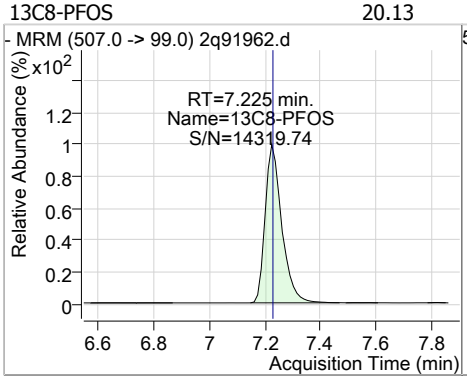
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.62	7.15	0.00	72200				

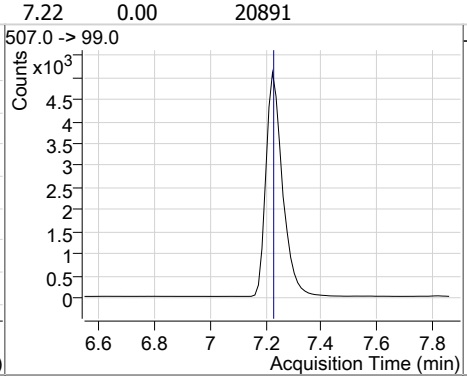


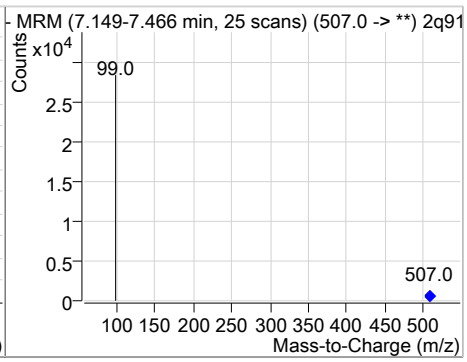




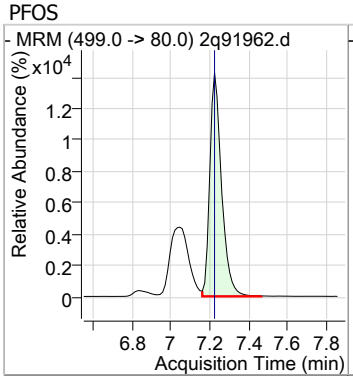
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.13	7.22	0.00	20891				

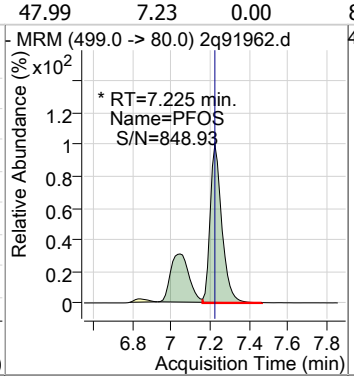


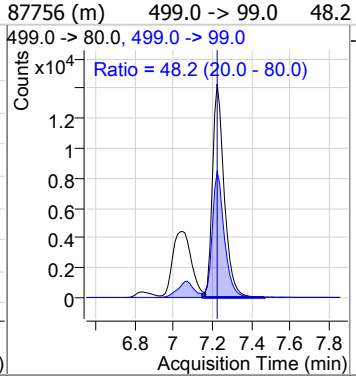


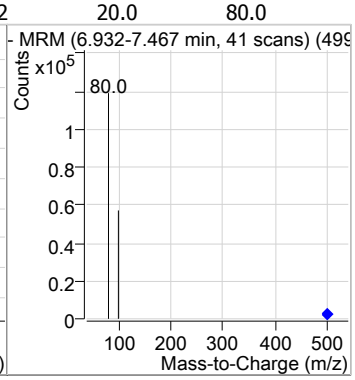


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	47.99	7.23	0.00	87756 (m)	499.0 -> 99.0	48.2	20.0	80.0



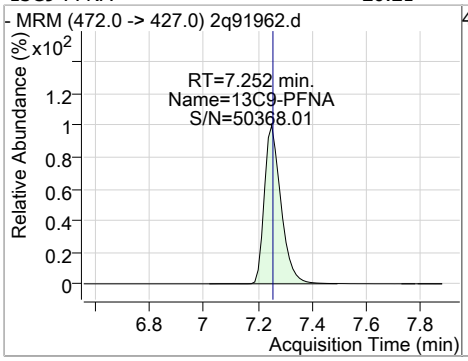


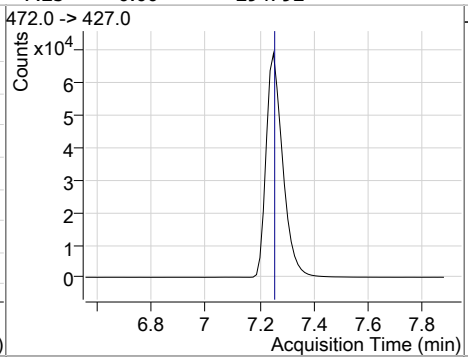


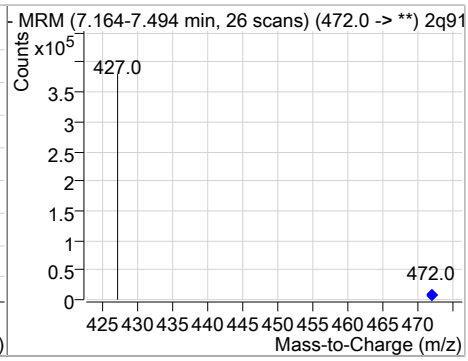


Perfluorinated Compounds by LC/MS/MS

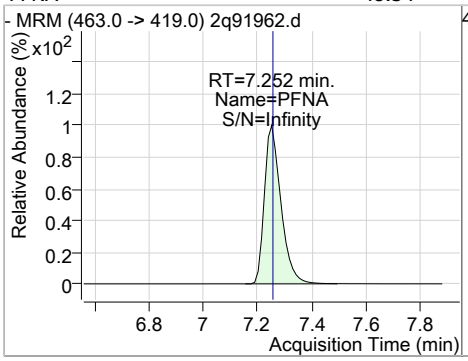
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.21	7.25	0.00	294792				

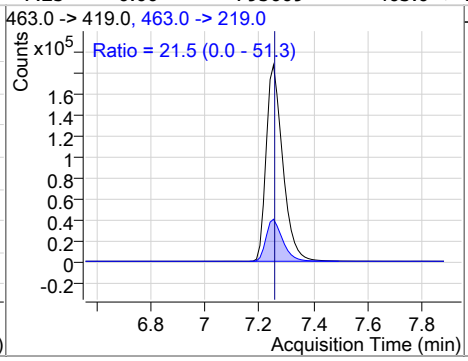


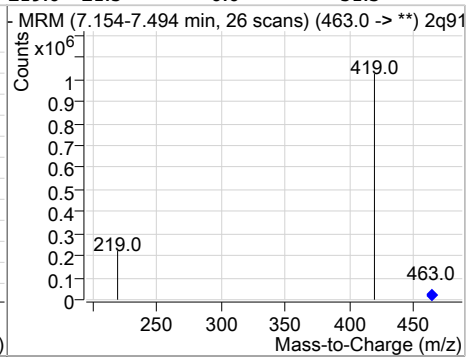




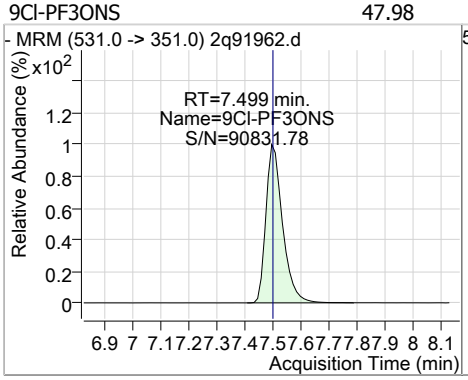
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	48.54	7.25	0.00	795669	463.0 -> 219.0	21.5	0.0	51.3

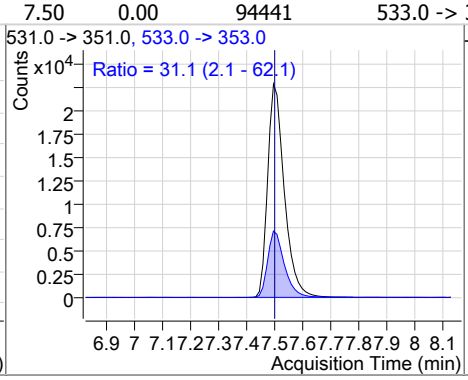


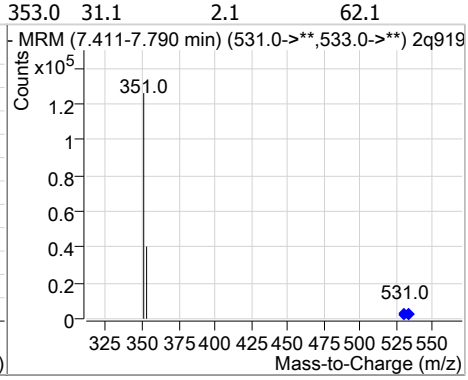




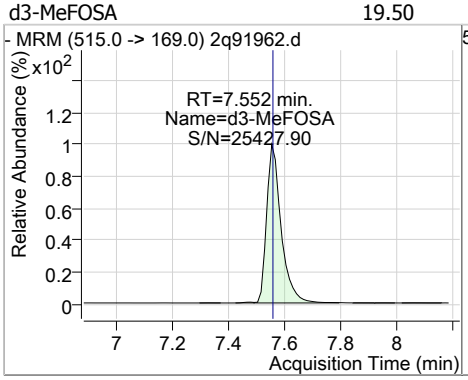
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	47.98	7.50	0.00	94441	533.0 -> 353.0	31.1	2.1	62.1

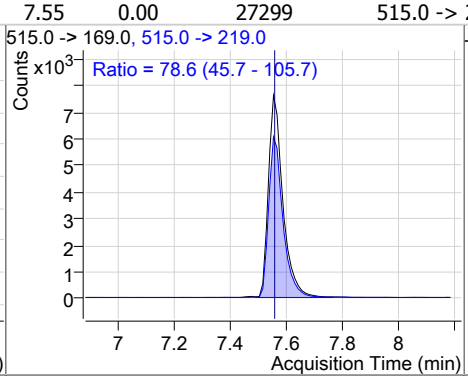


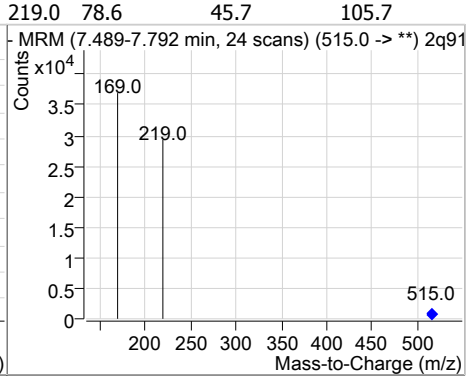




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	19.50	7.55	0.00	27299	515.0 -> 219.0	78.6	45.7	105.7

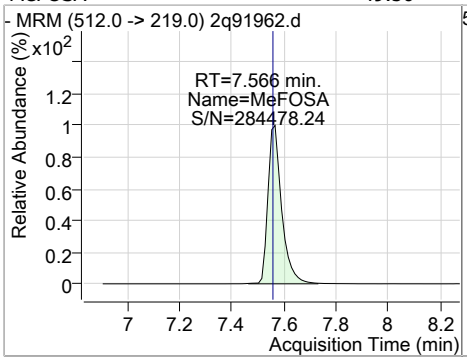


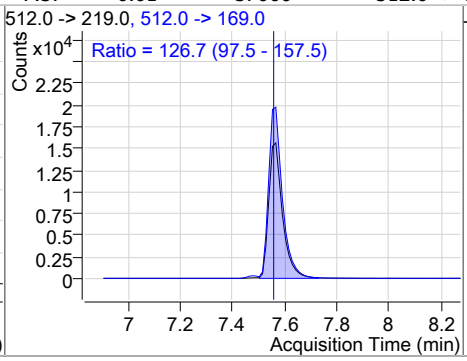


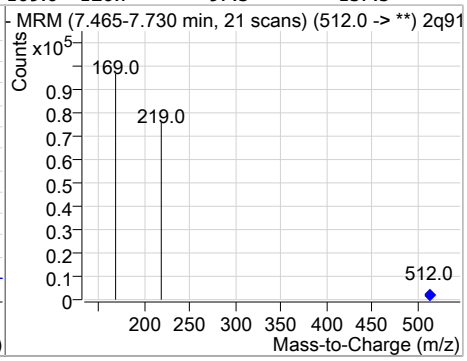


Perfluorinated Compounds by LC/MS/MS

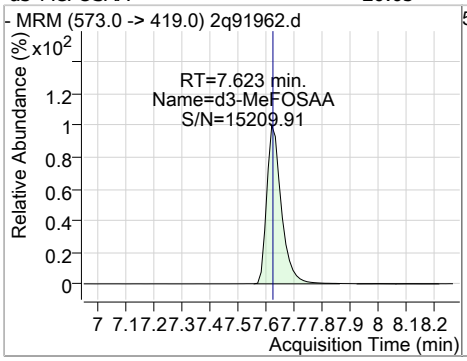
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	49.56	7.57	0.01	57066	512.0 -> 169.0	126.7	97.5	157.5

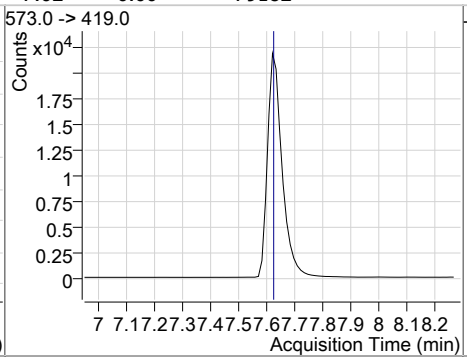


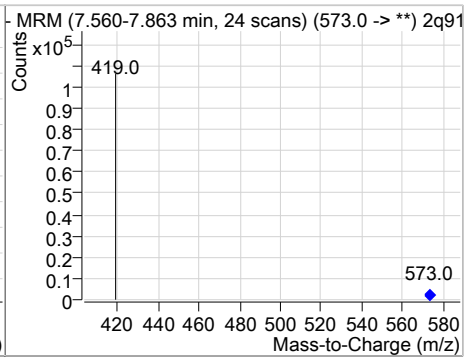




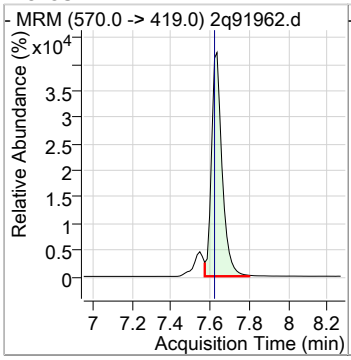
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.65	7.62	0.00	79182				

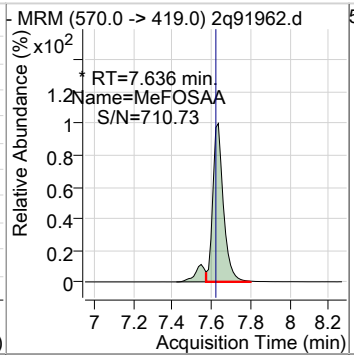


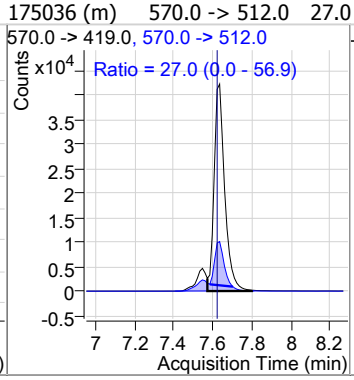


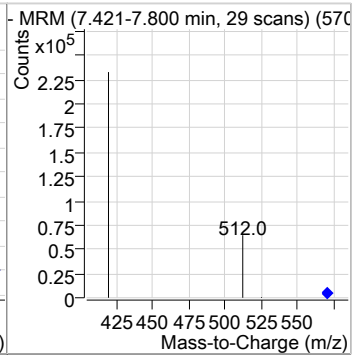


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	48.12	7.64	0.01	175036 (m)	570.0 -> 512.0	27.0	0.0	56.9

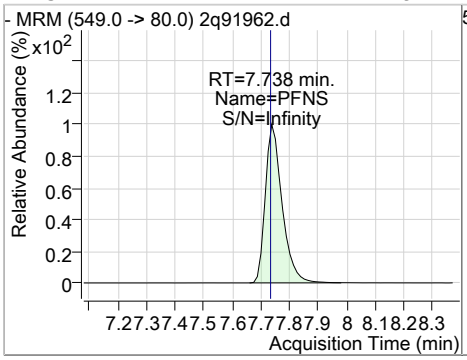


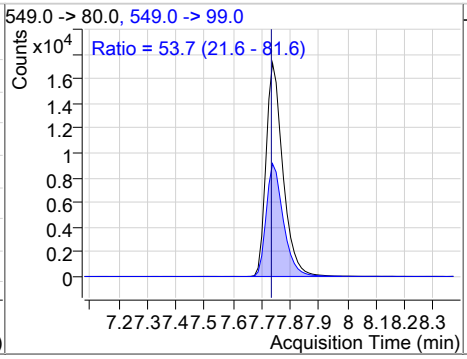


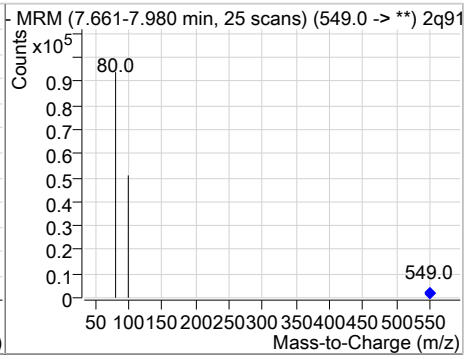




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	47.79	7.74	0.00	70309	549.0 -> 99.0	53.7	21.6	81.6

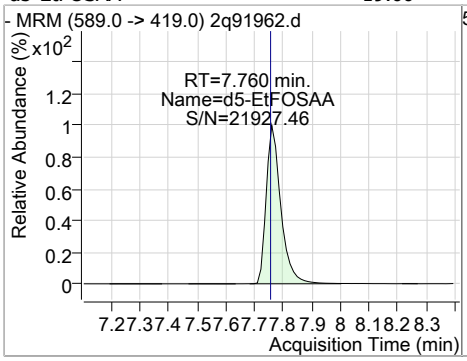


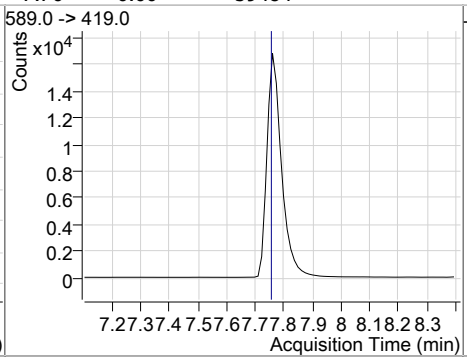


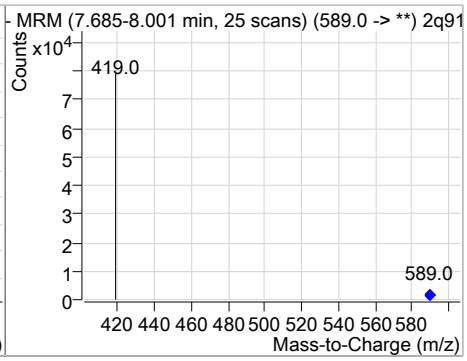


Perfluorinated Compounds by LC/MS/MS

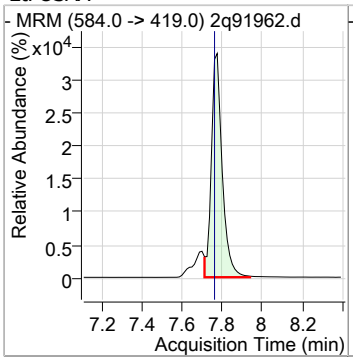
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	19.60	7.76	0.00	59484				

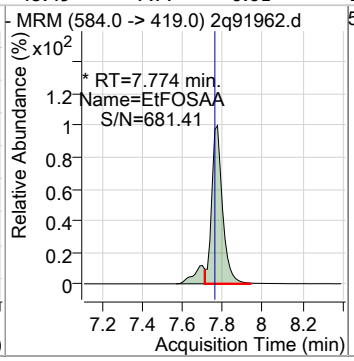


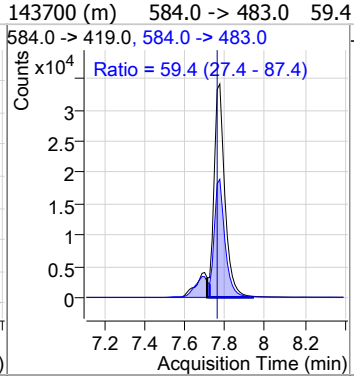


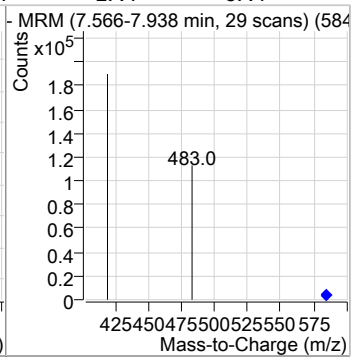


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	48.49	7.77	0.01	143700 (m)	584.0 -> 483.0	59.4	27.4	87.4

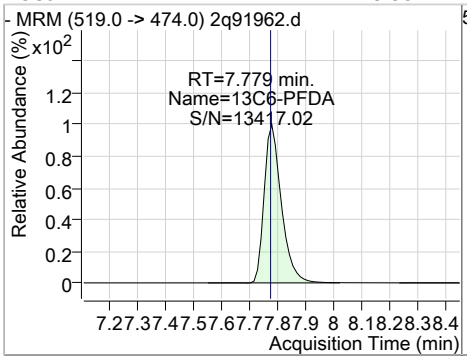


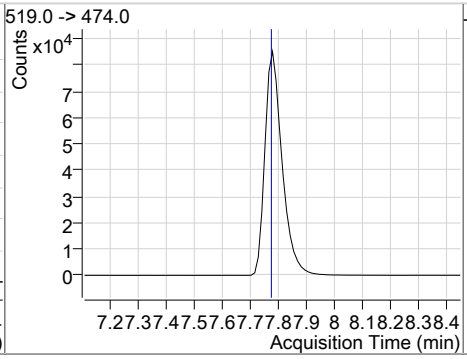


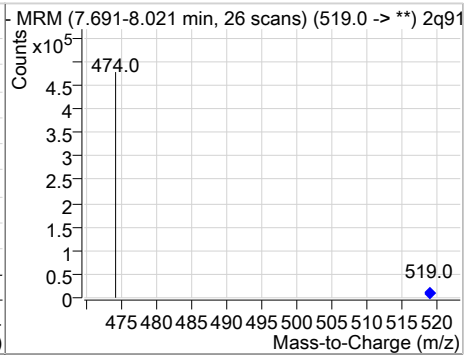




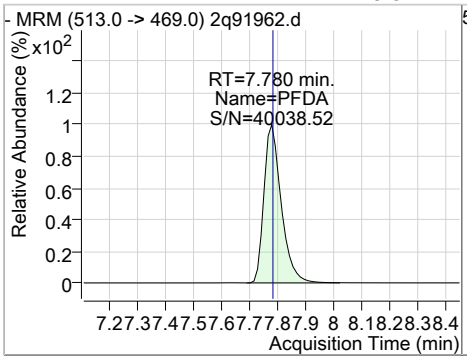
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.95	7.78	0.00	363291				

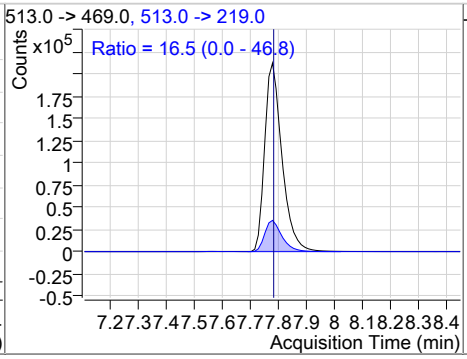


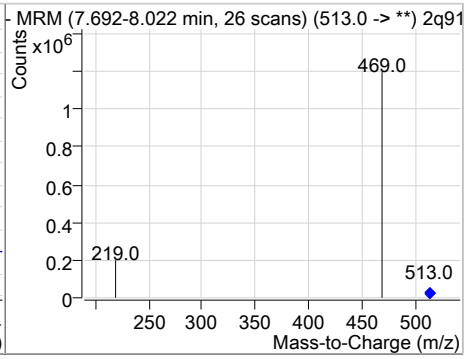




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	49.37	7.78	0.00	908865	513.0 -> 219.0	16.5	0.0	46.8

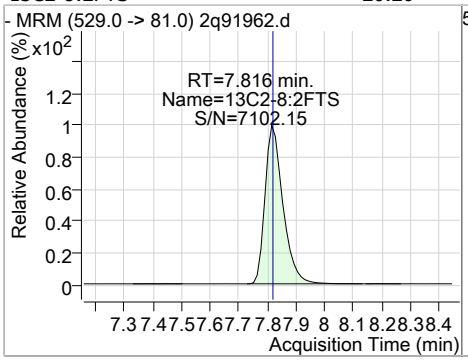


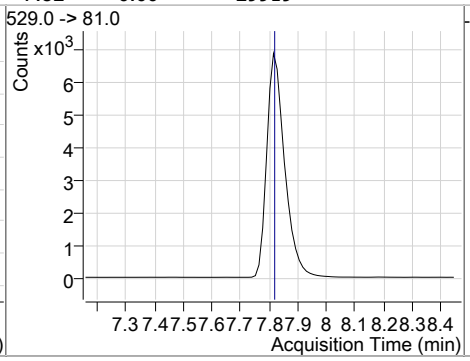


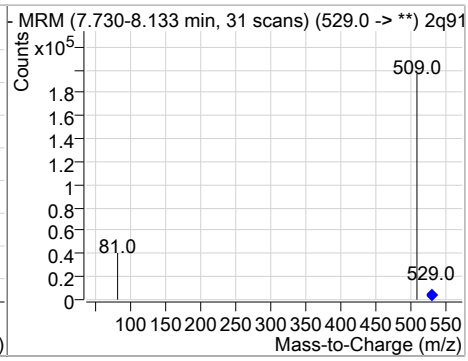


Perfluorinated Compounds by LC/MS/MS

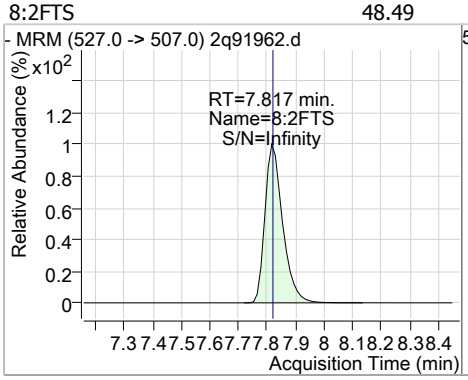
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.20	7.82	0.00	29919				

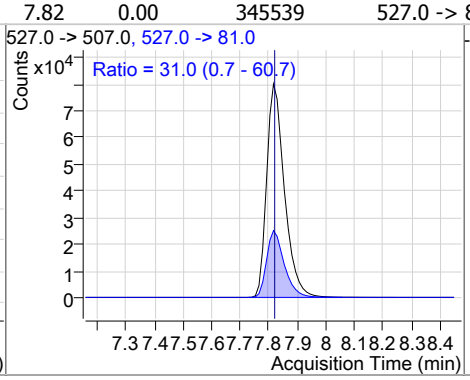


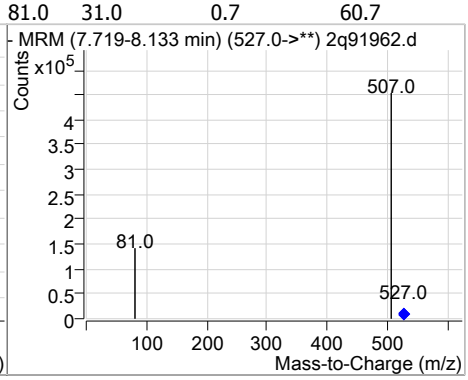




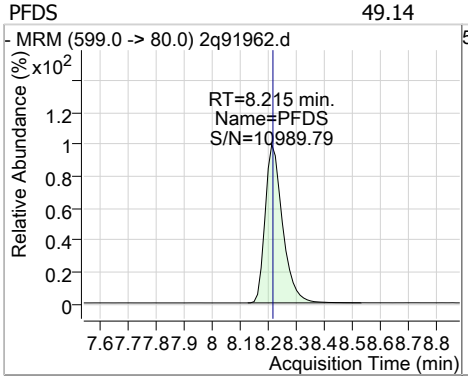
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	48.49	7.82	0.00	345539	527.0 -> 81.0	31.0	0.7	60.7

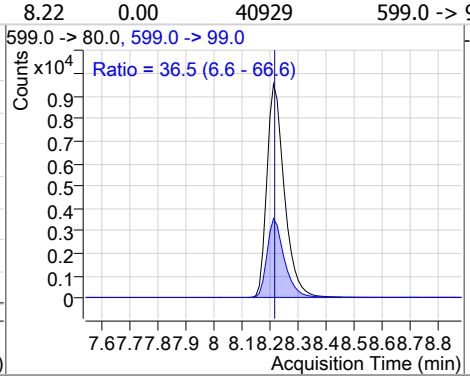


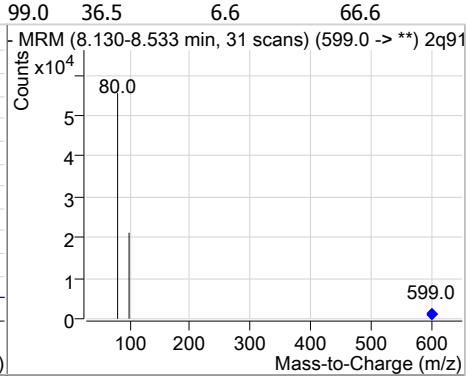




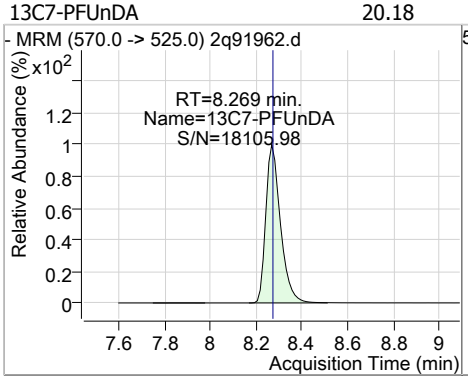
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	49.14	8.22	0.00	40929	599.0 -> 99.0	36.5	6.6	66.6

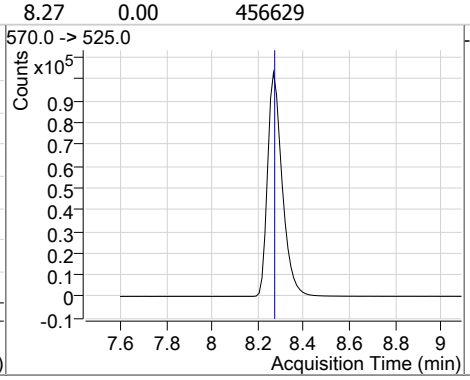


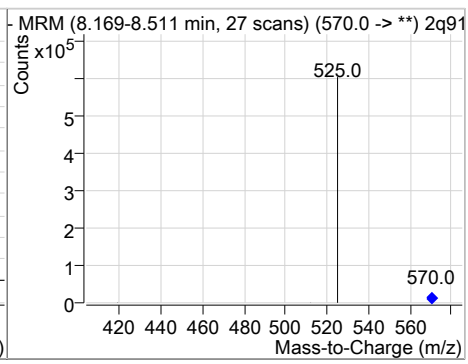




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.18	8.27	0.00	456629				

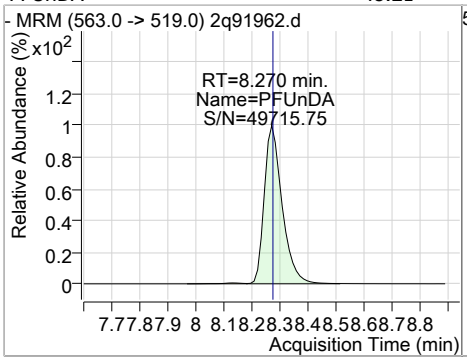


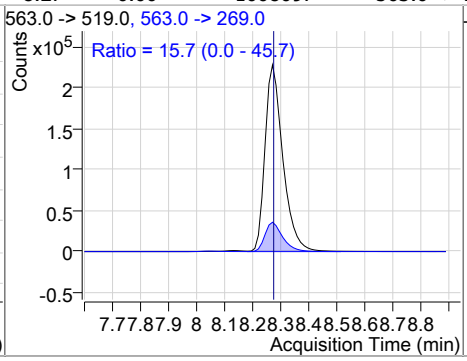


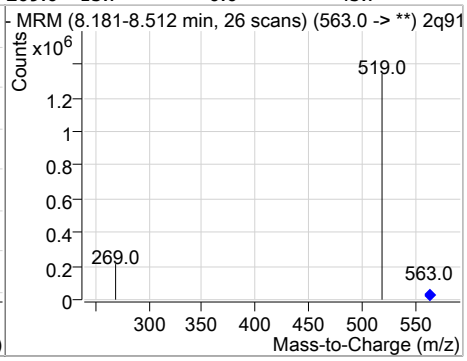


Perfluorinated Compounds by LC/MS/MS

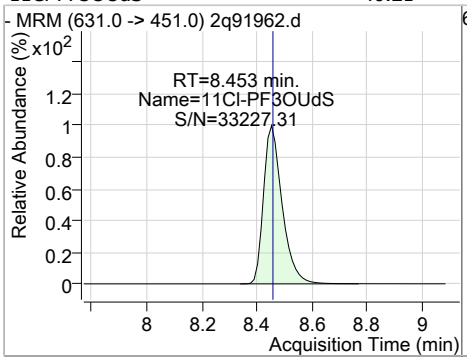
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	48.21	8.27	0.00	1008097	563.0 -> 269.0	15.7	0.0	45.7

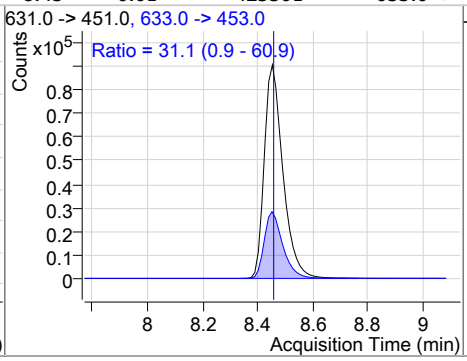


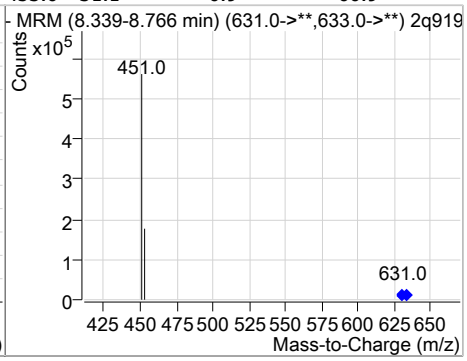




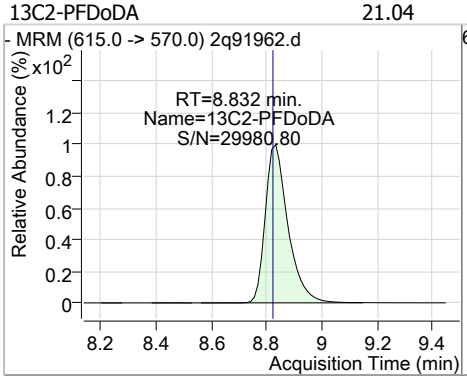
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	46.21	8.45	0.01	423301	633.0 -> 453.0	31.1	0.9	60.9

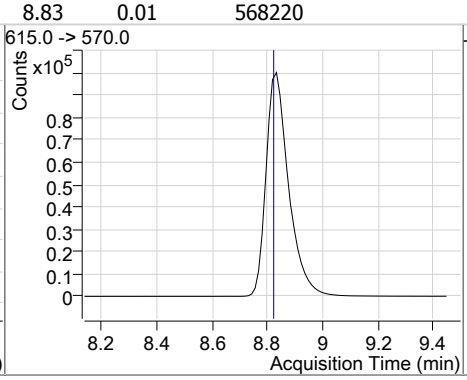


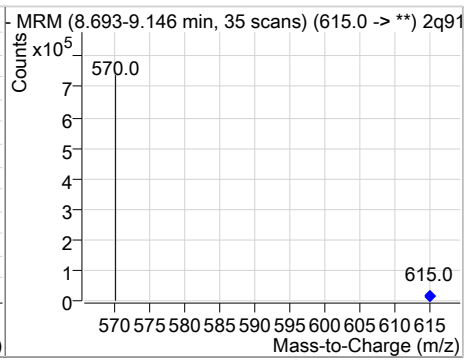




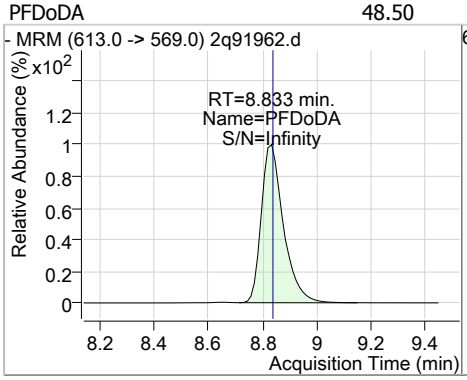
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.04	8.83	0.01	568220				

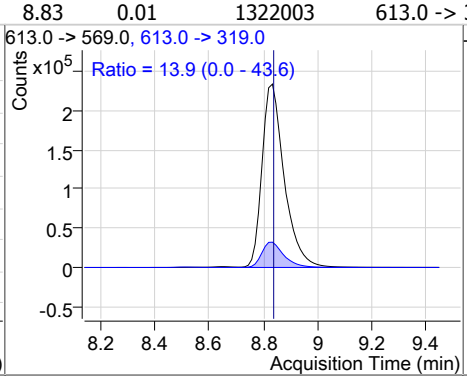


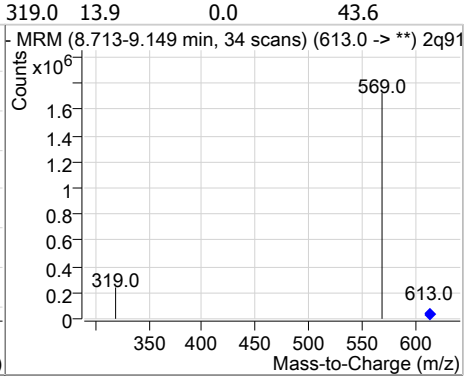




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	48.50	8.83	0.01	1322003	613.0 -> 319.0	13.9	0.0	43.6

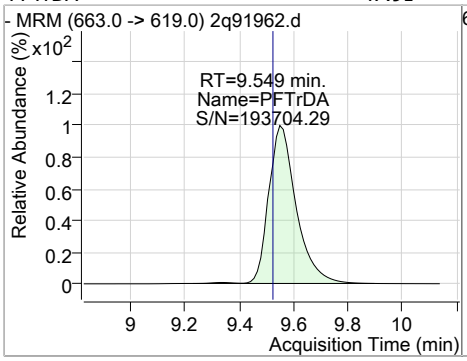


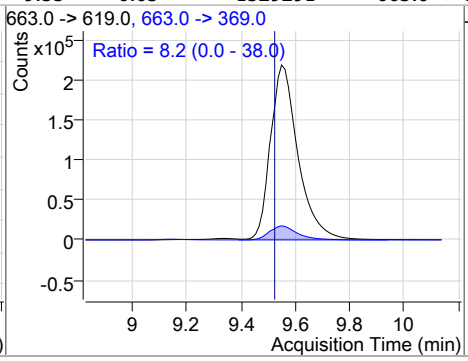


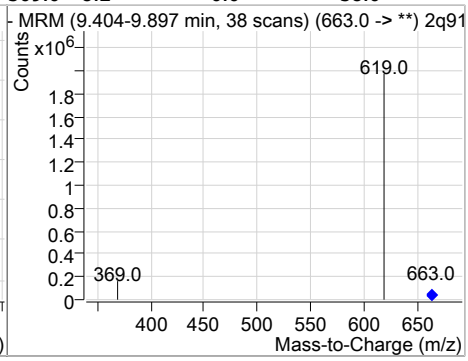


Perfluorinated Compounds by LC/MS/MS

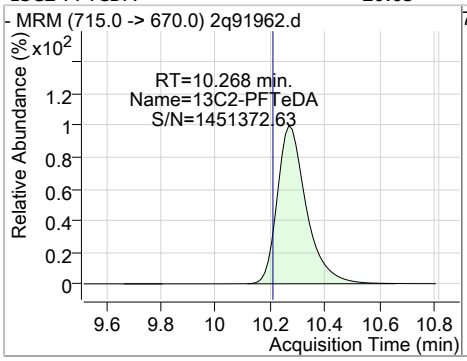
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	47.91	9.55	0.05	1529291	663.0 -> 369.0	8.2	0.0	38.0

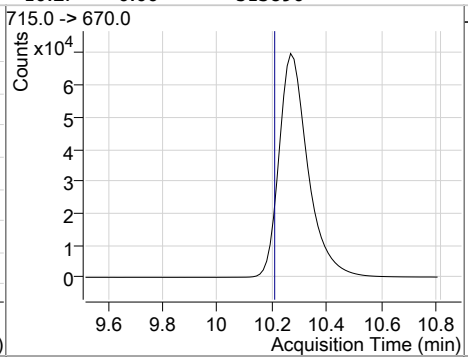


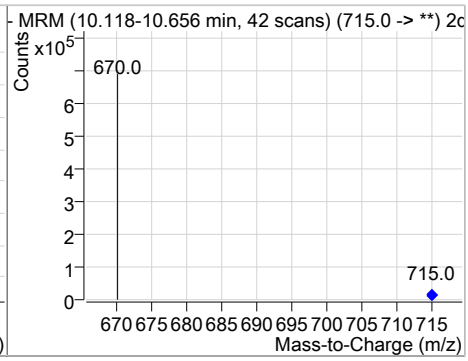




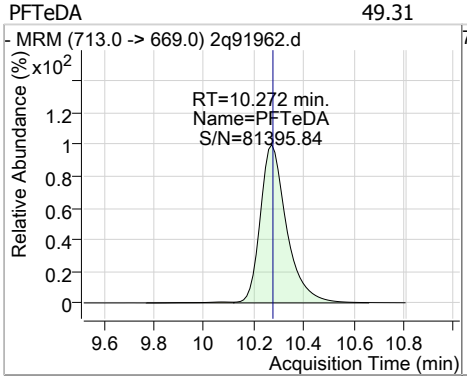
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.65	10.27	0.06	513890				

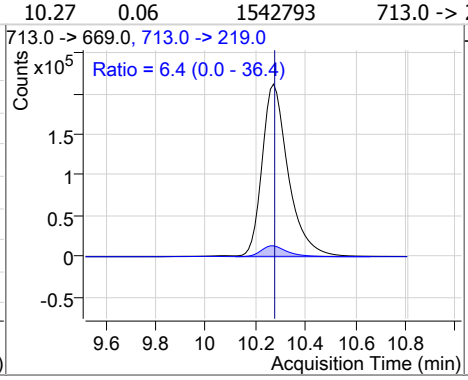


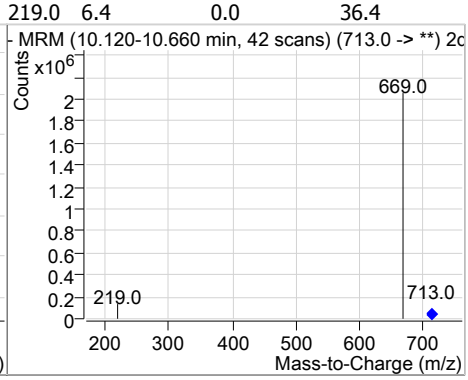




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	49.31	10.27	0.06	1542793	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91962.D
Injection Time: 05/27/22 13:57
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.64	Split peak
EtFOSAA	2991-50-6		7.77	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:34

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91963.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 2:16:02 PM
Sample Name : ic1287-100
Vial : P1-A9
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

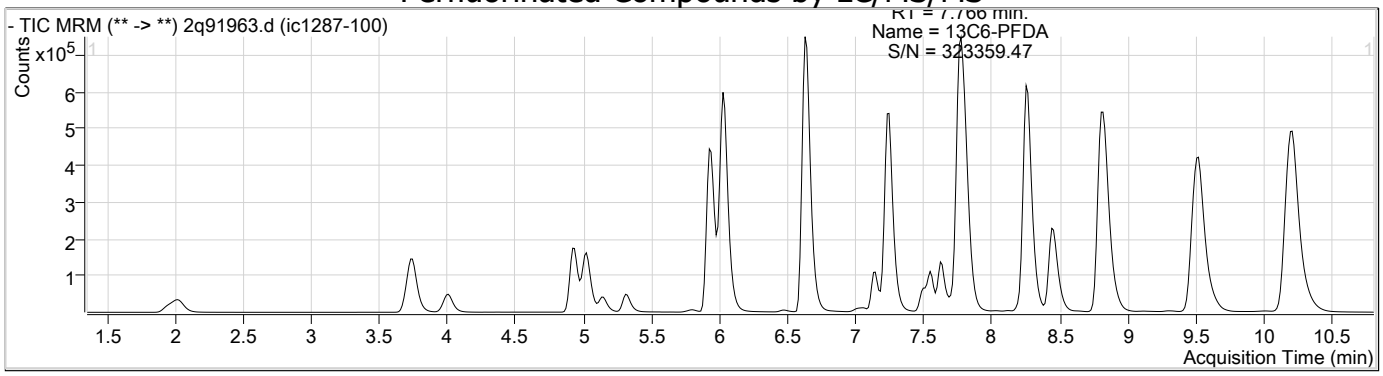
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	54040	20.00	µg/L	0.000
M4-PFBA	2.014	217.0 -> 172.0	77818	20.00	µg/L	0.000
M5-PFPeA	3.749	268.0 -> 223.0	91461	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	134968	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	184491	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	248602	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	282834	20.00	µg/L	0.000
M6-PFDA	7.766	519.0 -> 474.0	345331	20.00	µg/L	-0.013
M7-PFUnDA	8.256	570.0 -> 525.0	436517	20.00	µg/L	-0.013
M2-PFDoDA	8.818	615.0 -> 570.0	502547	20.00	µg/L	0.000
M2-PFTeDA	10.205	715.0 -> 670.0	484142	20.00	µg/L	0.000
M8-FOSA	7.149	506.0 -> 78.0	62959	20.00	µg/L	0.000
M3-PFBS	4.004	302.0 -> 99.0	10229	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	14135	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	19852	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	9265	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	19842	20.00	µg/L	0.000
M2-8:2FTS	7.816	529.0 -> 81.0	29568	20.00	µg/L	0.000
M3-MeFOSAA	7.623	573.0 -> 419.0	73798	20.00	µg/L	0.000
M3-HFPO-DA	5.319	287.0 -> 169.0	5166	20.00	µg/L	0.000
M3-MeFOSA	7.552	515.0 -> 169.0	25144	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	9265	19.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C2-6:2FTS	6.634	429.0 -> 81.0	19842	19.19	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C2-8:2FTS	7.816	529.0 -> 81.0	29568	19.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C2-PFDoDA	8.818	615.0 -> 570.0	502547	18.60	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C2-PFTeDA	10.205	715.0 -> 670.0	484142	19.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%		
13C3-PFBS	4.004	302.0 -> 99.0	10229	20.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C3-PFHxS	5.967	402.0 -> 99.0	14135	19.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C4-PFBA	2.014	217.0 -> 172.0	77818	20.14	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C4-PFHpA	5.929	367.0 -> 322.0	184491	19.87	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
d5-EtFOSAA	7.760	589.0 -> 419.0	54040	17.80	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.0%		
13C5-PFHxA	5.027	318.0 -> 273.0	134968	19.99	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
13C5-PFPeA	3.749	268.0 -> 223.0	91461	20.07	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

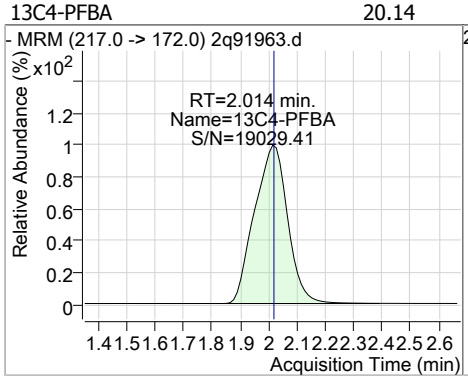
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.3%			
13C6-PFDA	7.766	519.0 -> 474.0	345331	18.96	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%			
13C7-PFUnDA	8.256	570.0 -> 525.0	436517	19.29	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.5%			
13C8-FOSA	7.149	506.0 -> 78.0	62959	17.11	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.5%			
13C8-PFOA	6.649	421.0 -> 376.0	248602	19.31	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%			
13C8-PFOS	7.225	507.0 -> 99.0	19852	19.13	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%			
13C9-PFNA	7.252	472.0 -> 427.0	282834	19.39	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
d3-MeFOSAA	7.623	573.0 -> 419.0	73798	19.24	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	5166	19.84	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.2%			
d3-MeFOSA	7.552	515.0 -> 169.0	25144	17.97	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	484998	99.91	µg/L		99
6:2FTS	6.635	427.0 -> 407.0	710713	97.15	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	687608	97.63	µg/L		100
EtFOSAA	7.761	584.0 -> 419.0	271601	100.88	µg/L	m	98
FOSA	7.150	498.0 -> 78.0	334958	101.31	µg/L		100
MeFOSAA	7.623	570.0 -> 419.0	341770	100.81	µg/L	m	100
PFBA	2.021	213.0 -> 169.0	200922	100.69	µg/L		100
PFBS	4.007	299.0 -> 80.0	171364	100.49	µg/L		100
PFDA	7.768	513.0 -> 469.0	1756066	100.35	µg/L		100
PFDoDA	8.807	613.0 -> 569.0	2429691	100.79	µg/L		100
PFDS	8.215	599.0 -> 80.0	79916	100.37	µg/L		99
PFHpA	5.930	363.0 -> 319.0	1515472	100.47	µg/L		100
PFHpS	6.645	449.0 -> 80.0	165500	99.62	µg/L		100
PFHxA	5.028	313.0 -> 269.0	502314	100.59	µg/L		100
PFHxS	5.967	399.0 -> 80.0	177315	99.96	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	1584768	100.77	µg/L		100
PFNS	7.738	549.0 -> 80.0	141609	101.28	µg/L		99
PFOA	6.649	413.0 -> 369.0	1356360	100.45	µg/L		99
PFOS	7.225	499.0 -> 80.0	175755	101.14	µg/L	m	98
PFPeA	3.739	263.0 -> 219.0	708118	100.54	µg/L		100
PFPeS	5.145	349.0 -> 80.0	117216	100.49	µg/L		100
PFTeDA	10.210	713.0 -> 669.0	2959061	100.40	µg/L		100
PFTrDA	9.524	663.0 -> 619.0	2856994	101.20	µg/L		100
PFUnDA	8.257	563.0 -> 519.0	2018540	100.97	µg/L		99
11Cl-PF3OUdS	8.440	631.0 -> 451.0	827006	102.08	µg/L		100
9Cl-PF3ONS	7.499	531.0 -> 351.0	189381	101.21	µg/L		97
ADONA	6.032	377.0 -> 251.0	1890278	101.16	µg/L		99
HFPO-DA	5.314	329.0 -> 169.0	186914	100.35	µg/L		99
MeFOSA	7.554	512.0 -> 219.0	106158	100.10	µg/L		100

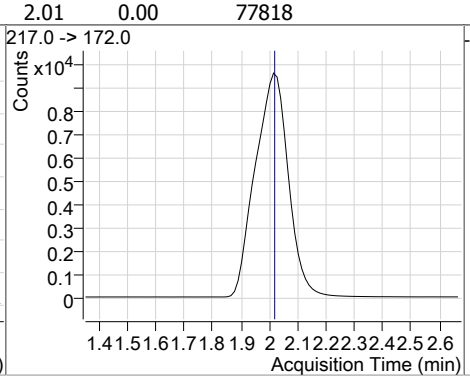
= Qualifier out of range, m = manually integrated, + = Area summed

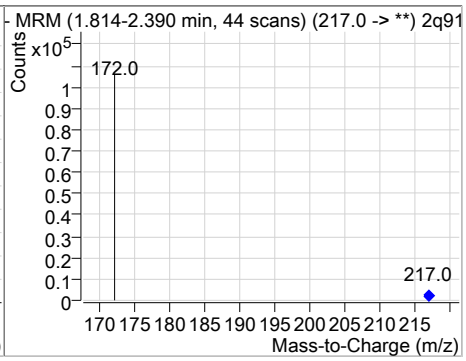
Perfluorinated Compounds by LC/MS/MS



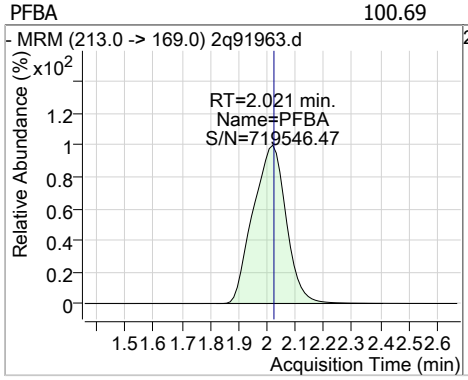
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.14	2.01	0.00	77818				

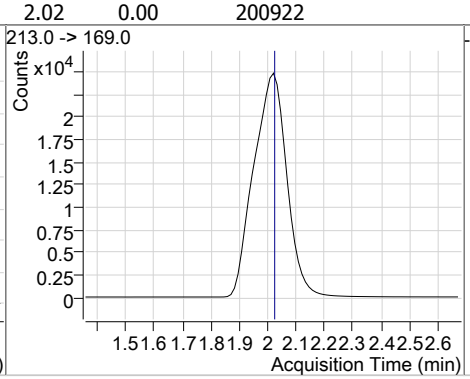


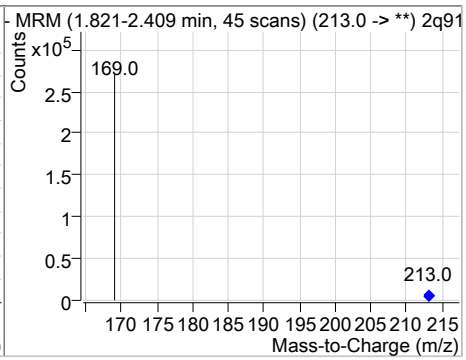




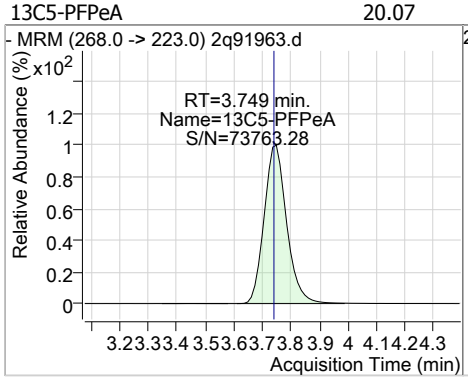
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	100.69	2.02	0.00	200922				

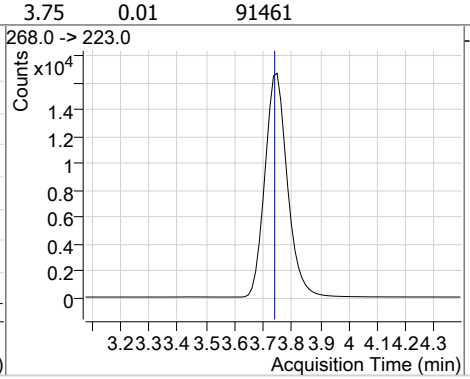


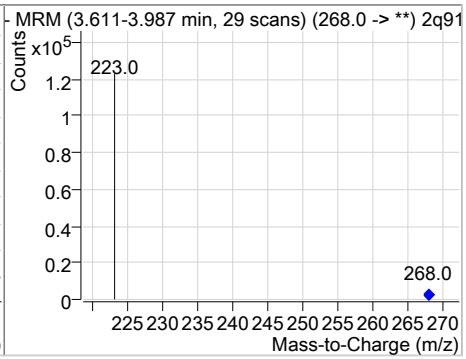




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.07	3.75	0.01	91461				

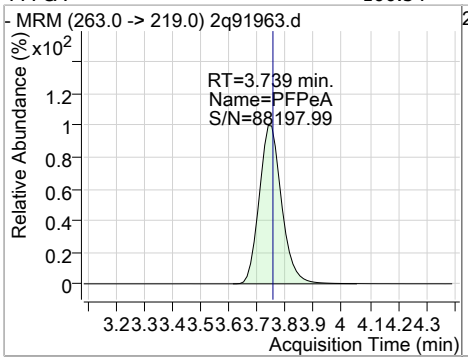


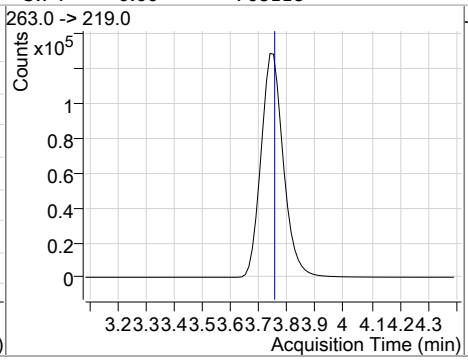


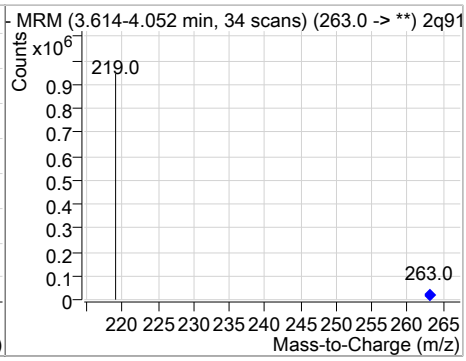


Perfluorinated Compounds by LC/MS/MS

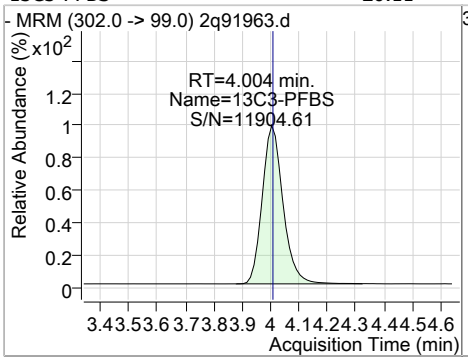
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	100.54	3.74	0.00	708118				

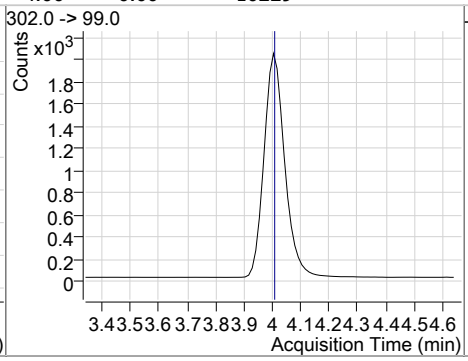


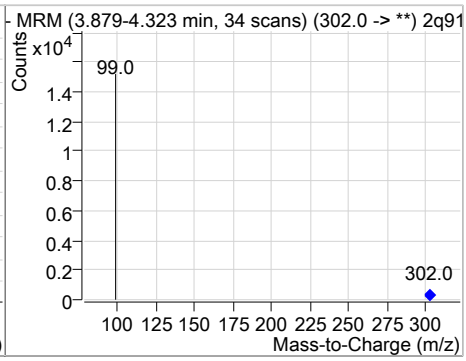




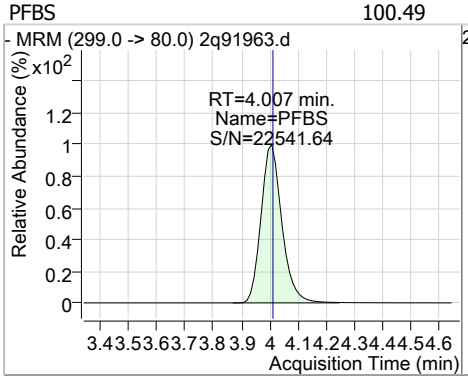
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.11	4.00	0.00	10229				

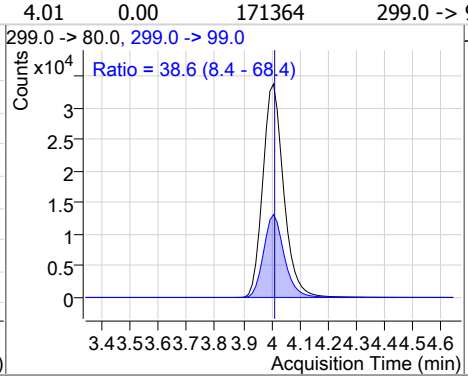


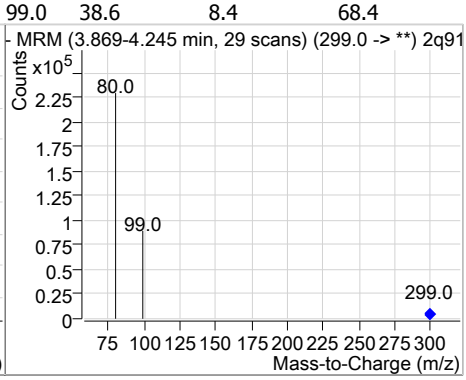




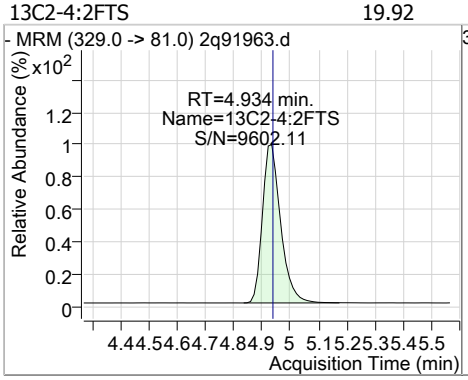
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	100.49	4.01	0.00	171364	299.0 -> 99.0	38.6	8.4	68.4

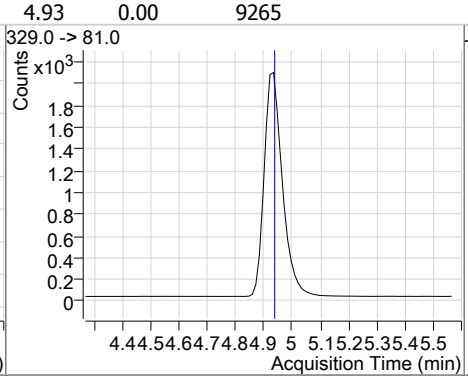


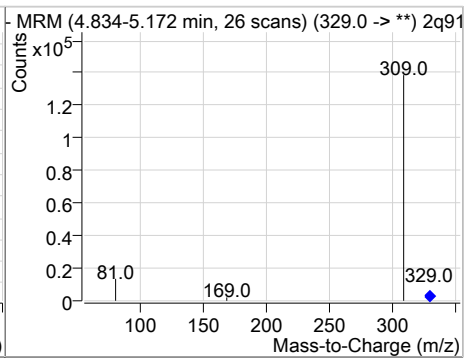




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.92	4.93	0.00	9265				

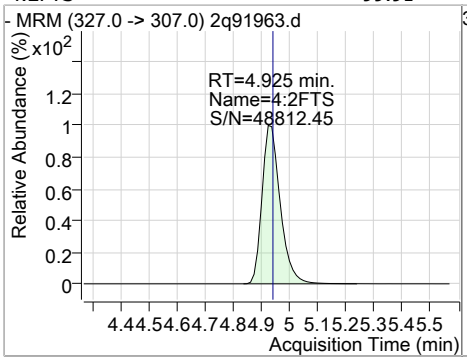


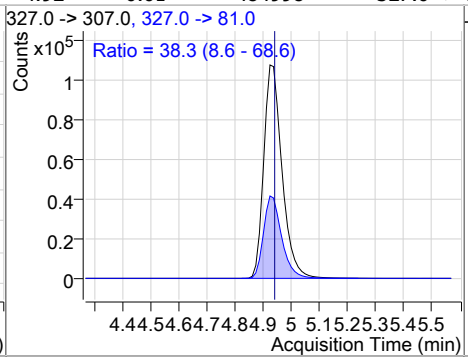


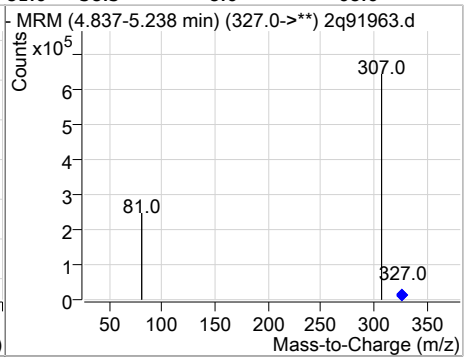


Perfluorinated Compounds by LC/MS/MS

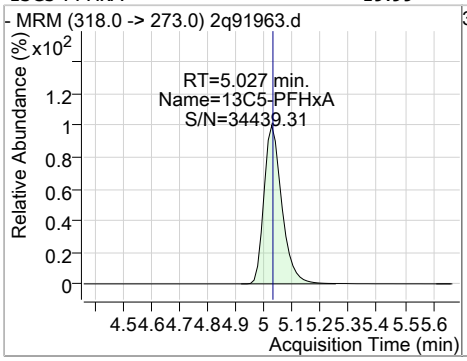
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	99.91	4.92	-0.01	484998	327.0 -> 81.0	38.3	8.6	68.6

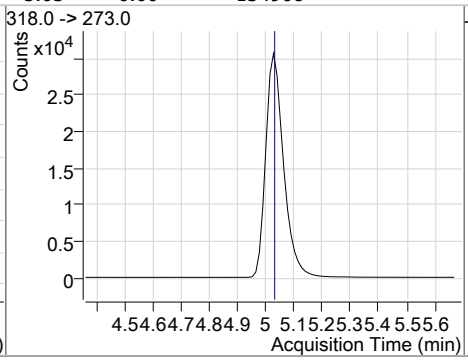


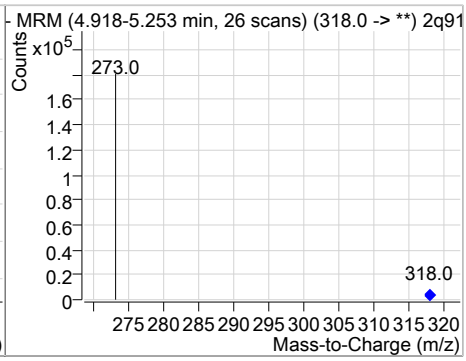




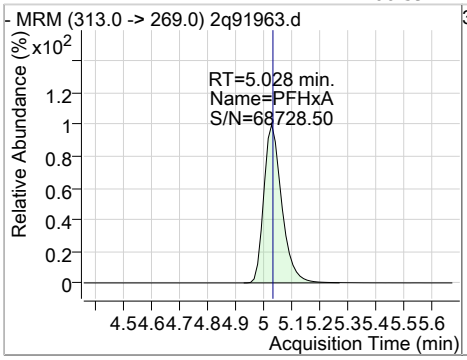
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.99	5.03	0.00	134968				

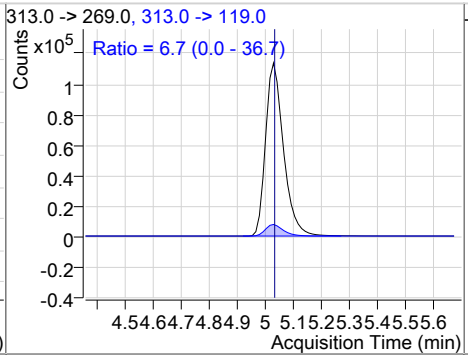


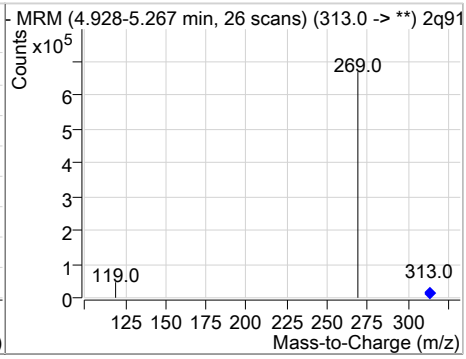




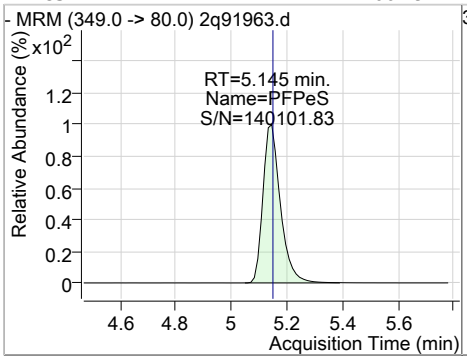
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	100.59	5.03	0.00	502314	313.0 -> 119.0	6.7	0.0	36.7

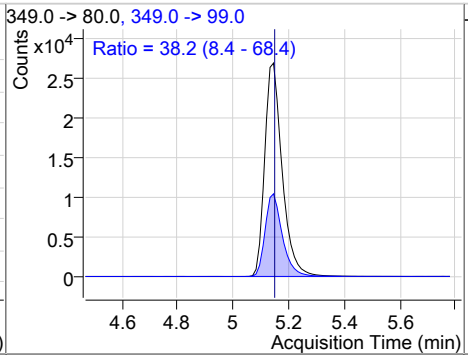


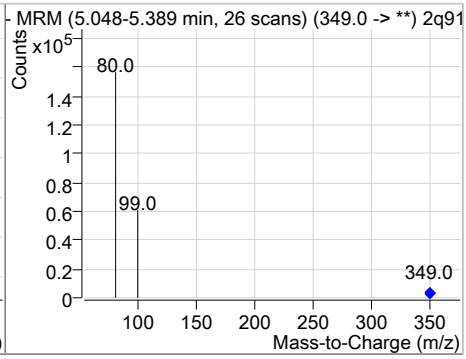




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	100.49	5.15	0.00	117216	349.0 -> 99.0	38.2	8.4	68.4

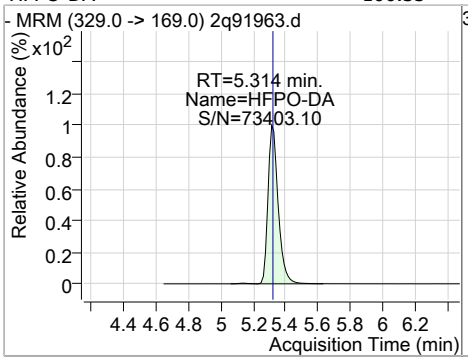


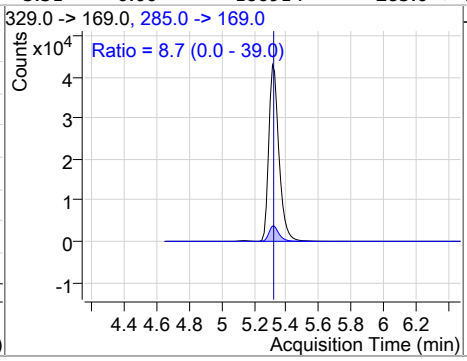


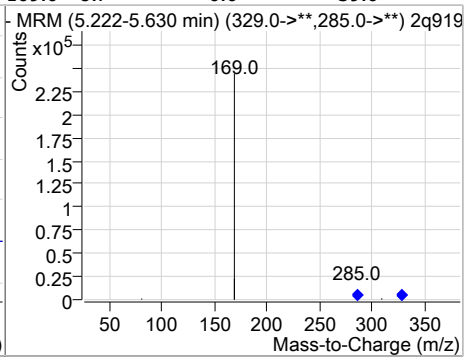


Perfluorinated Compounds by LC/MS/MS

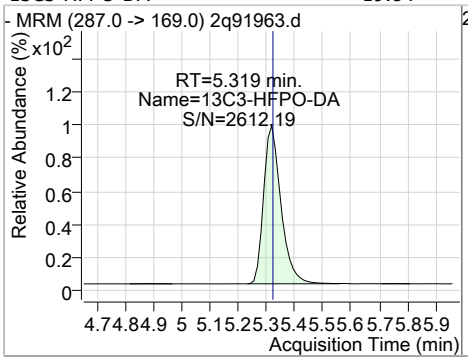
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	100.35	5.31	0.00	186914	285.0 -> 169.0	8.7	0.0	39.0

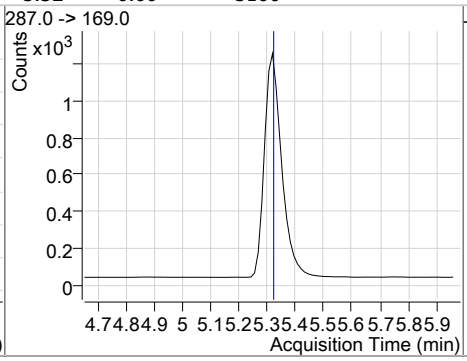


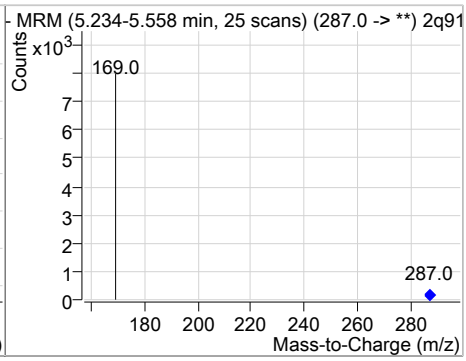




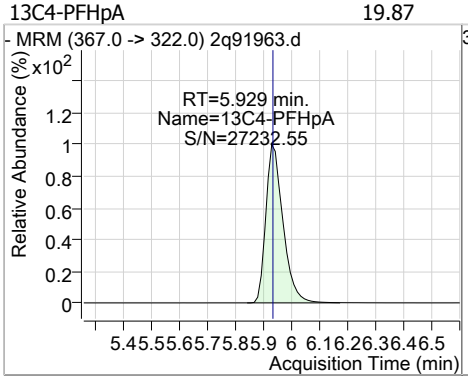
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.84	5.32	0.00	5166				

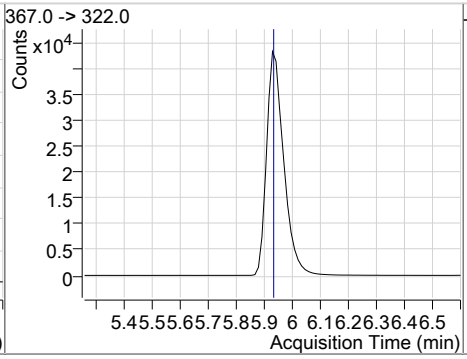


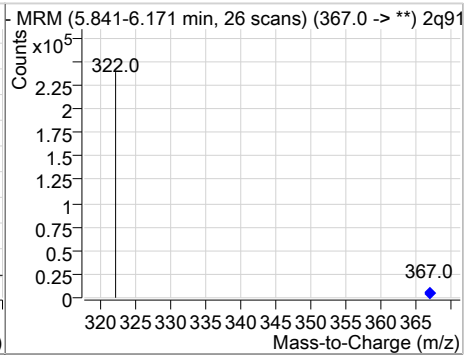




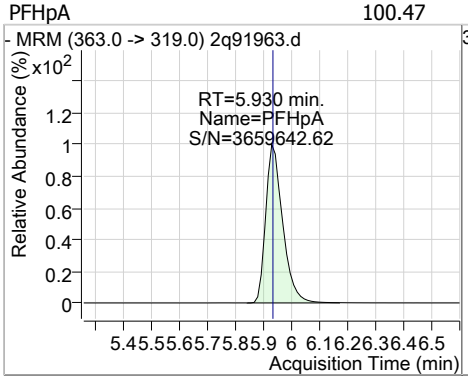
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.87	5.93	0.00	184491				

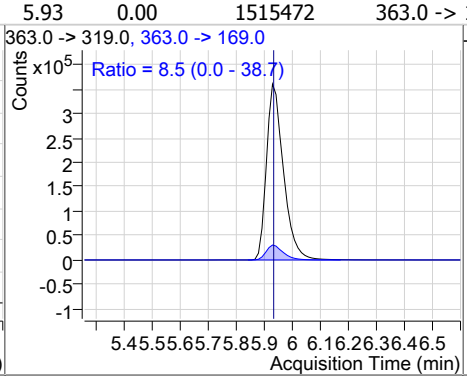


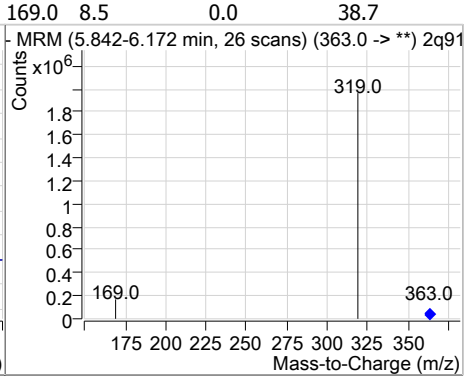




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	100.47	5.93	0.00	1515472	363.0 -> 169.0	8.5	0.0	38.7

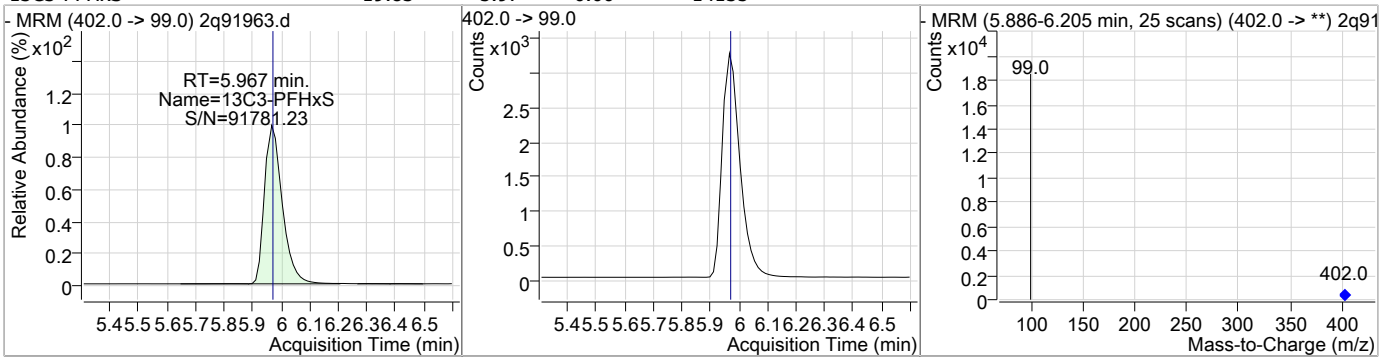




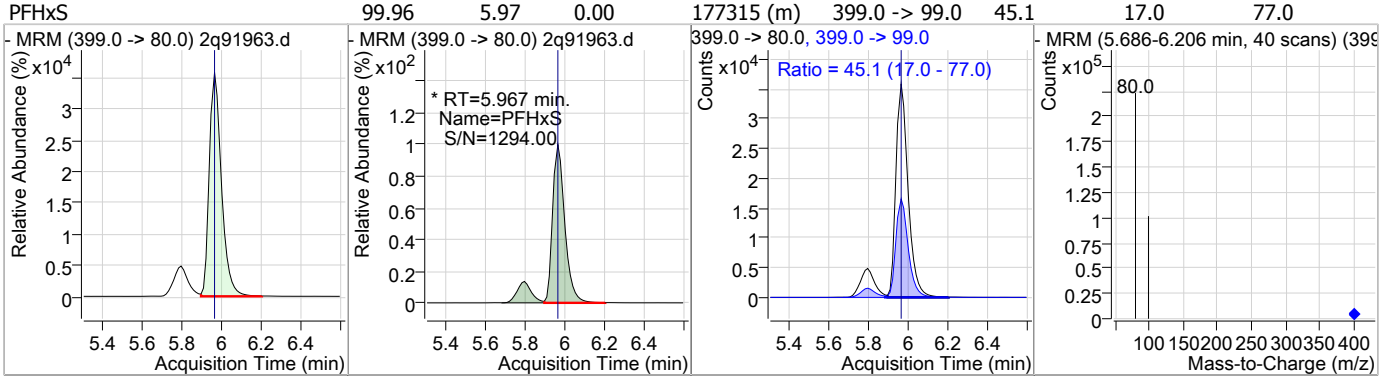


Perfluorinated Compounds by LC/MS/MS

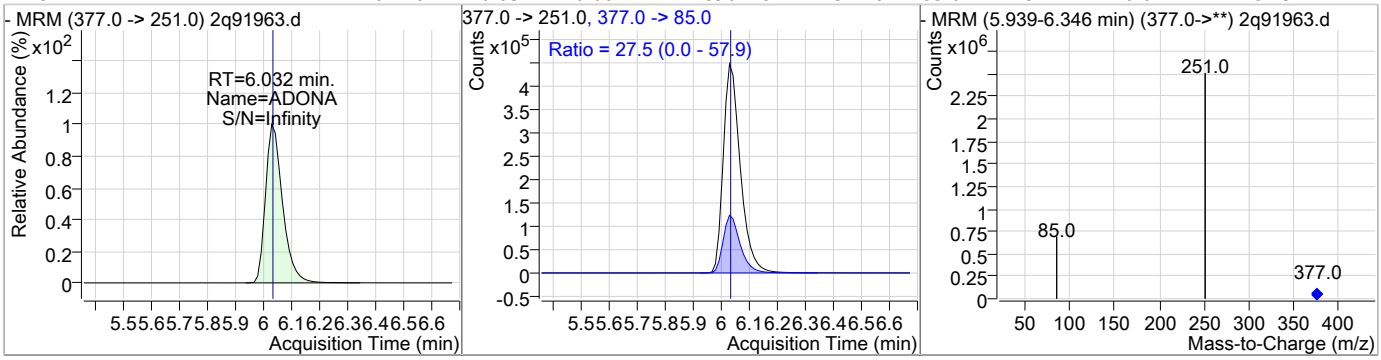
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.83	5.97	0.00	14135				



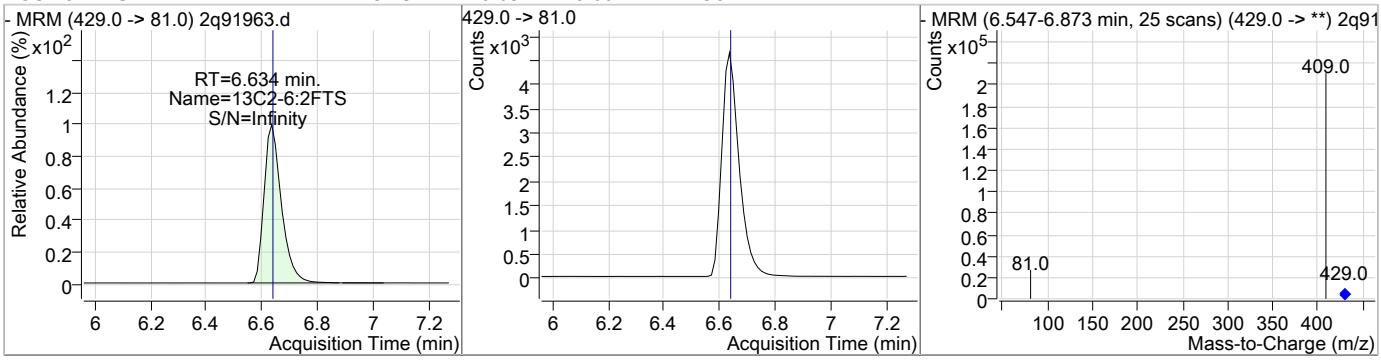
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	99.96	5.97	0.00	177315 (m)	399.0 -> 99.0	45.1	17.0	77.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	101.16	6.03	0.00	1890278	377.0 -> 85.0	27.5	0.0	57.9

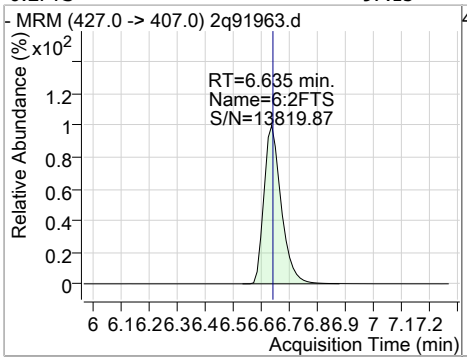


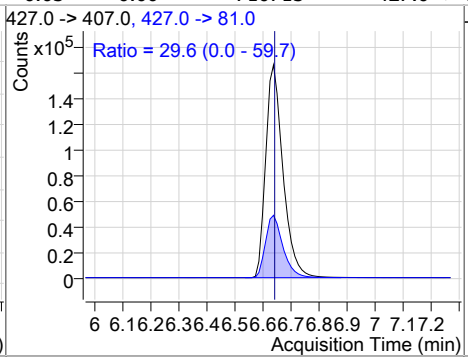
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.19	6.63	0.00	19842				

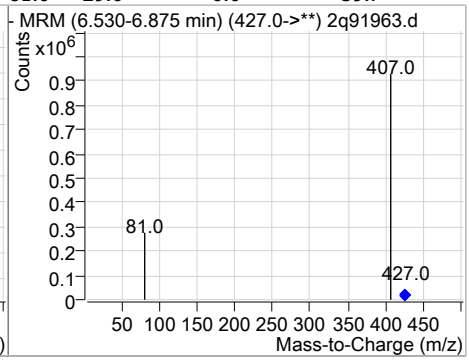


Perfluorinated Compounds by LC/MS/MS

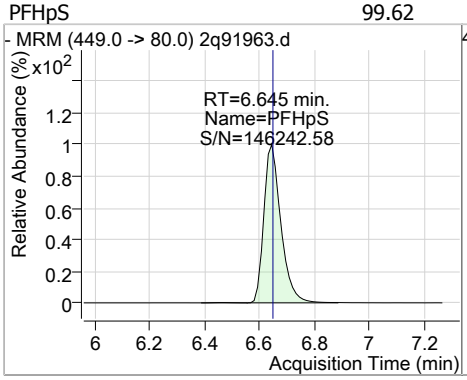
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	97.15	6.63	0.00	710713	427.0 -> 81.0	29.6	0.0	59.7

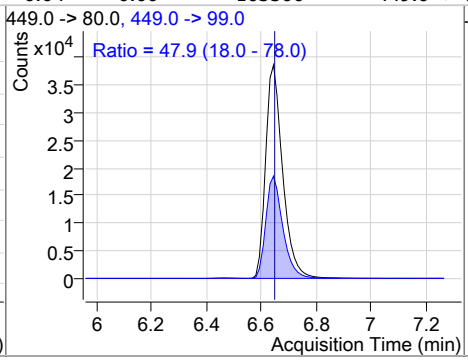


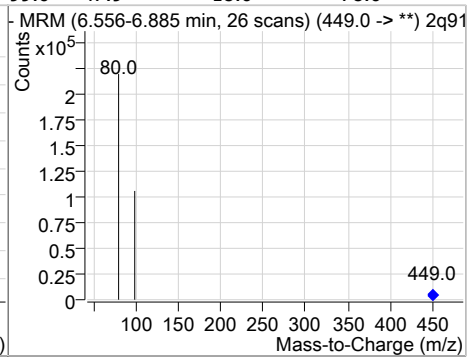




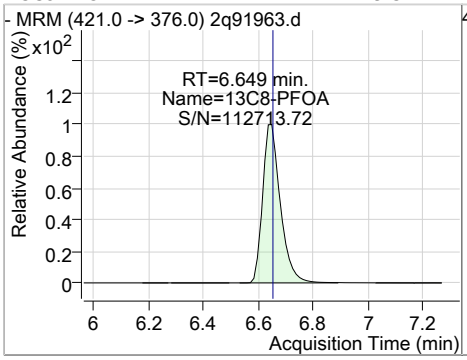
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	99.62	6.64	0.00	165500	449.0 -> 99.0	47.9	18.0	78.0

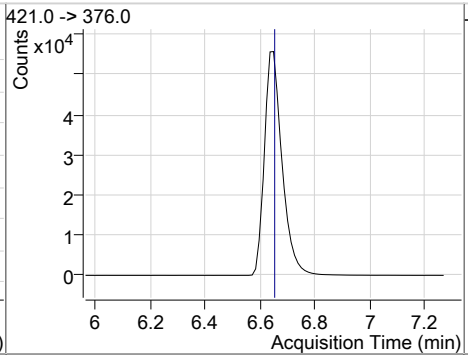


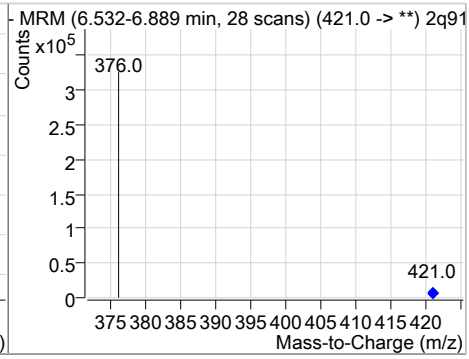




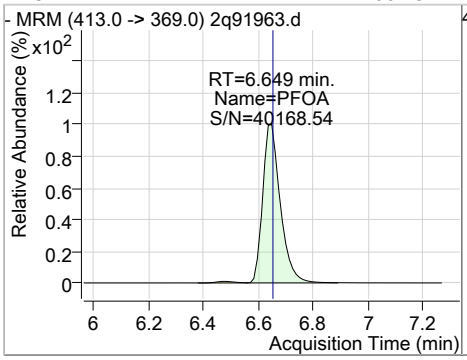
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.31	6.65	0.00	248602				

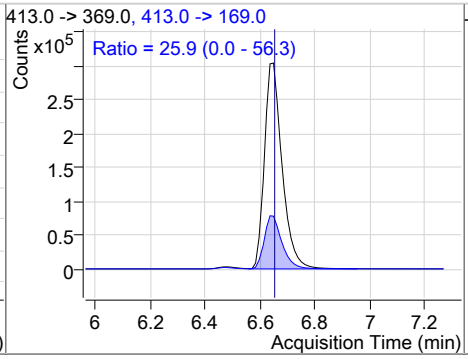


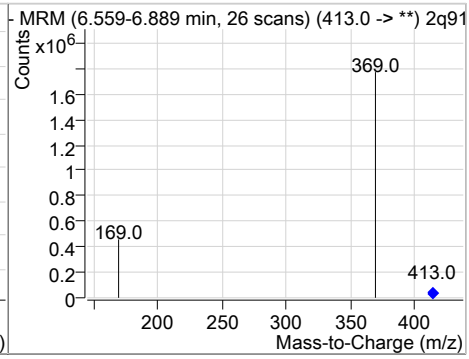




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	100.45	6.65	0.00	1356360	413.0 -> 169.0	25.9	0.0	56.3

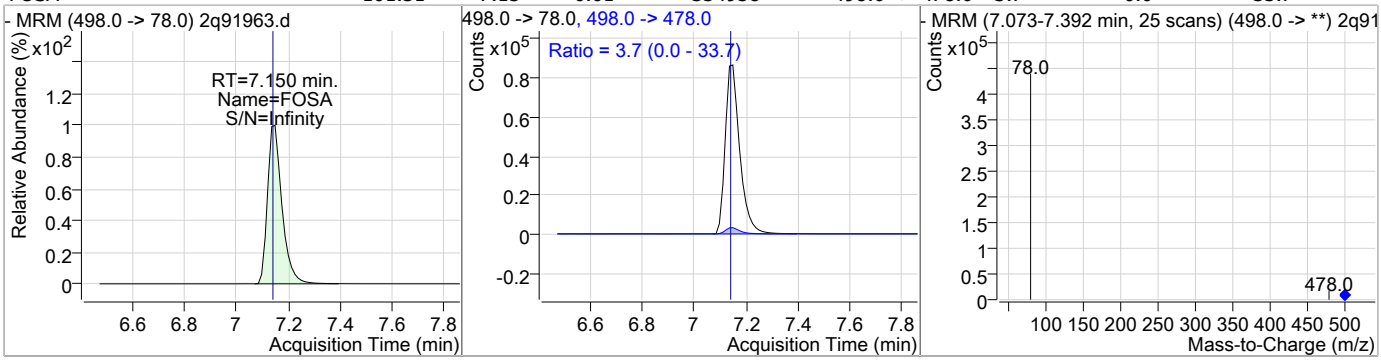




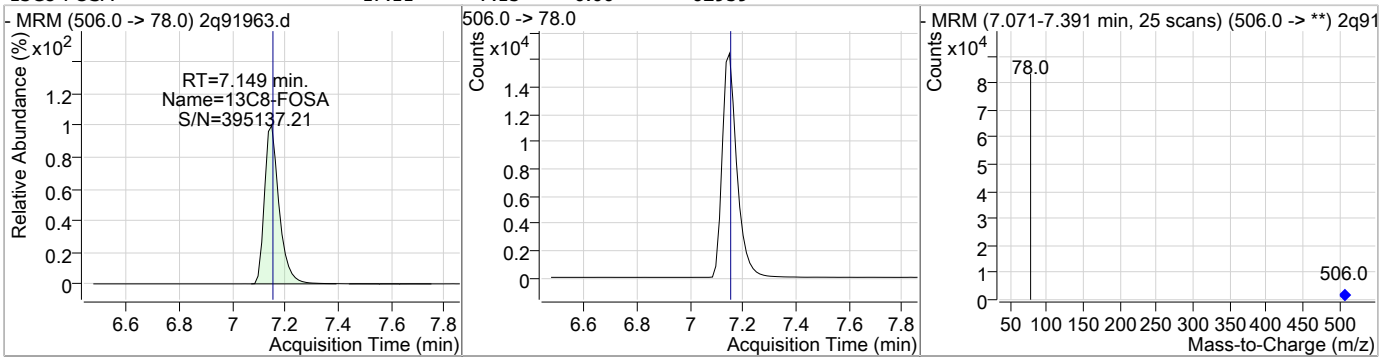


Perfluorinated Compounds by LC/MS/MS

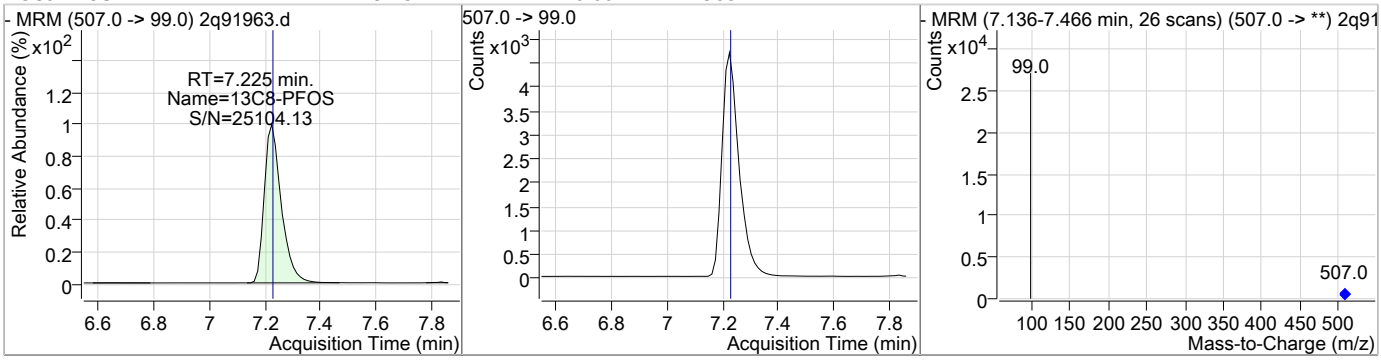
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	101.31	7.15	0.01	334958	498.0 -> 478.0	3.7	0.0	33.7



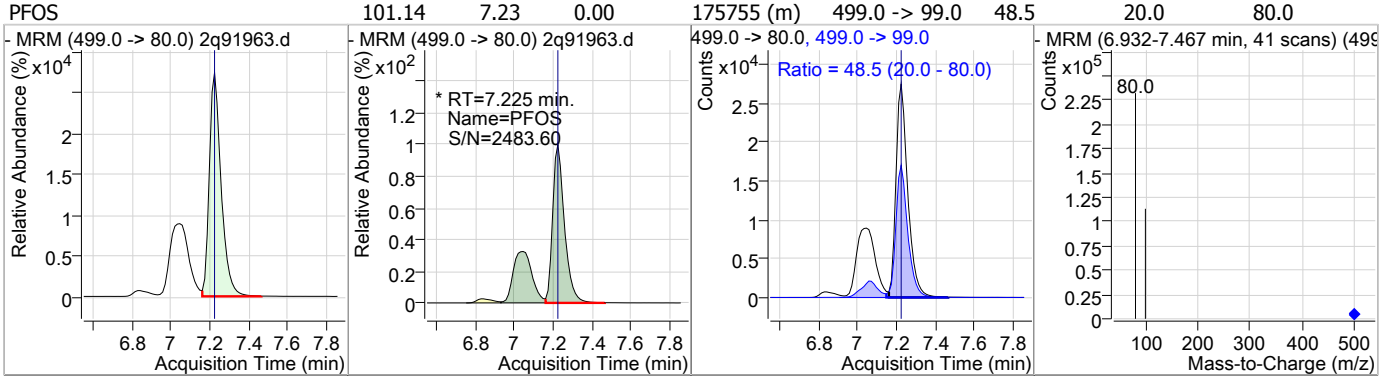
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.11	7.15	0.00	62959				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.13	7.22	0.00	19852				

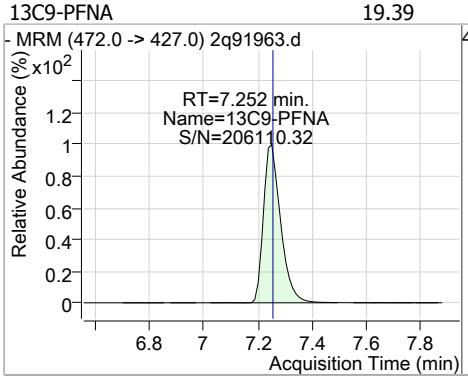


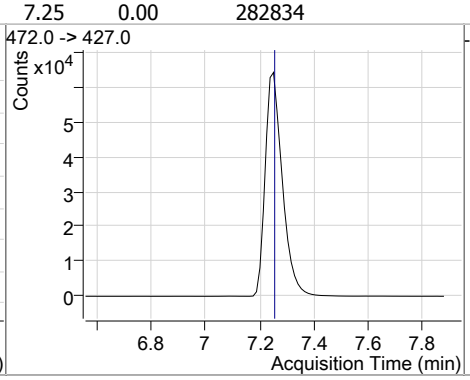
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	101.14	7.23	0.00	175755 (m)	499.0 -> 99.0	48.5	20.0	80.0

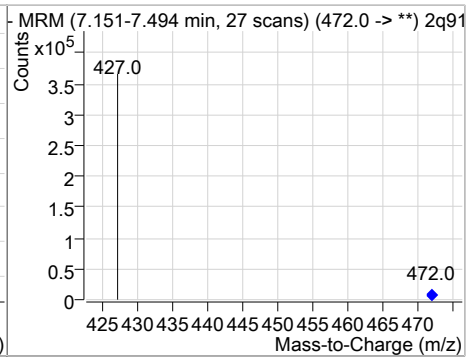


Perfluorinated Compounds by LC/MS/MS

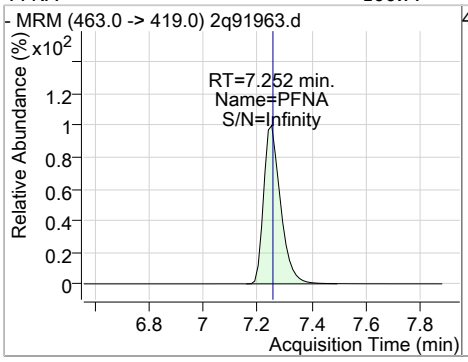
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.39	7.25	0.00	282834				

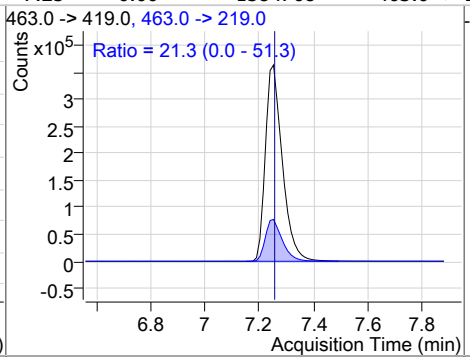


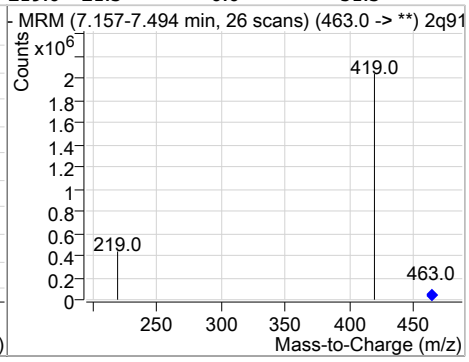




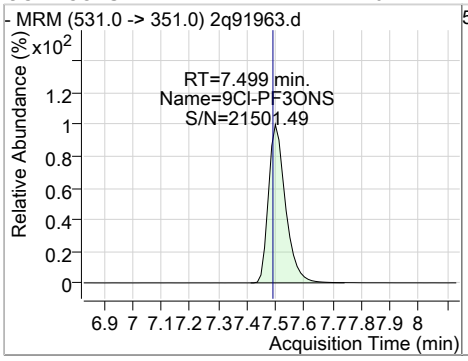
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	100.77	7.25	0.00	1584768	463.0 -> 219.0	21.3	0.0	51.3

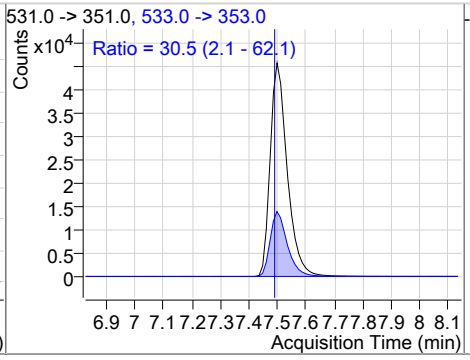


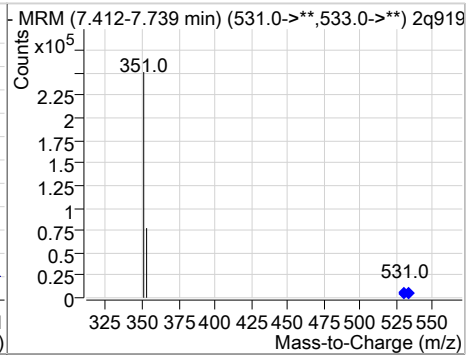




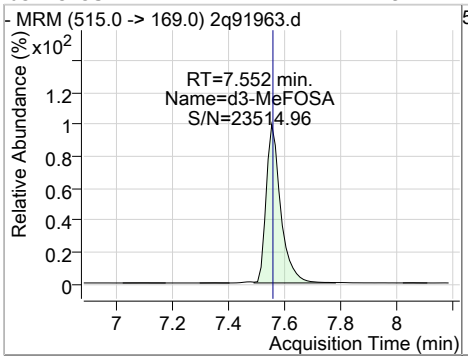
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	101.21	7.50	0.00	189381	533.0 -> 353.0	30.5	2.1	62.1

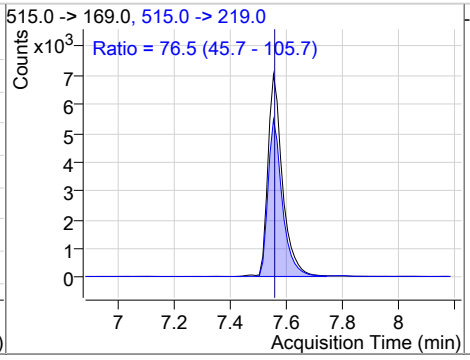


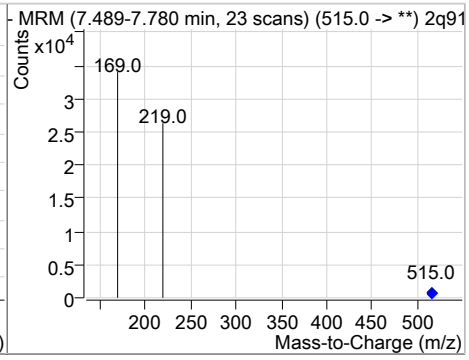




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.97	7.55	0.00	25144	515.0 -> 219.0	76.5	45.7	105.7

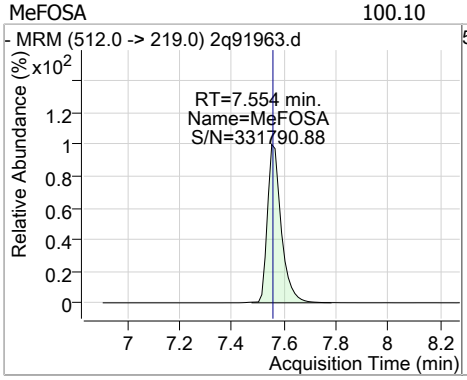


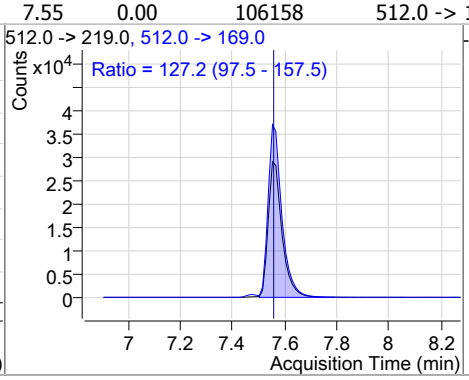


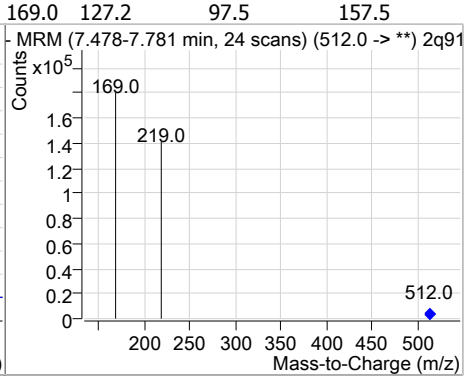


Perfluorinated Compounds by LC/MS/MS

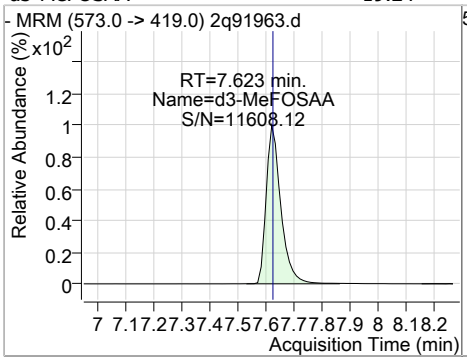
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	100.10	7.55	0.00	106158	512.0 -> 169.0	127.2	97.5	157.5

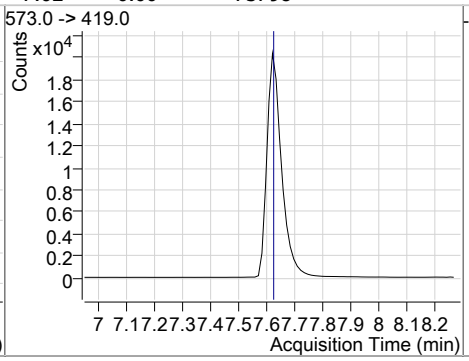


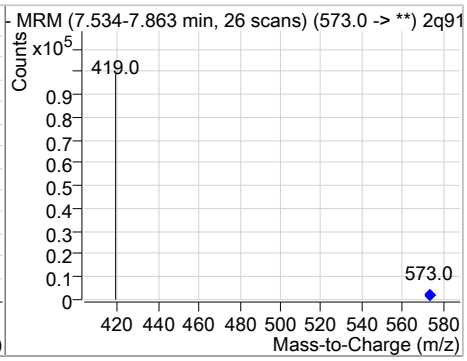




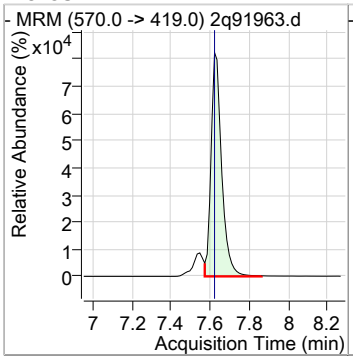
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.24	7.62	0.00	73798				

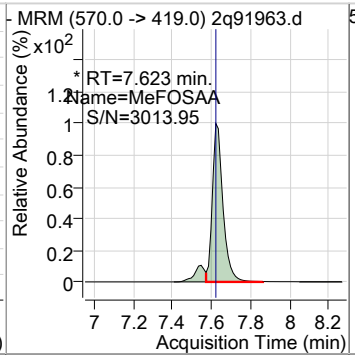


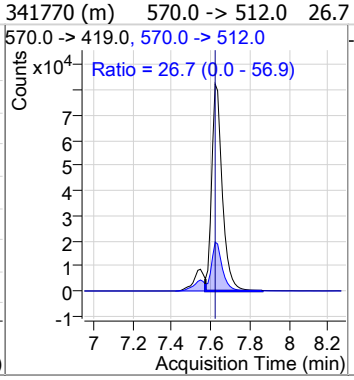


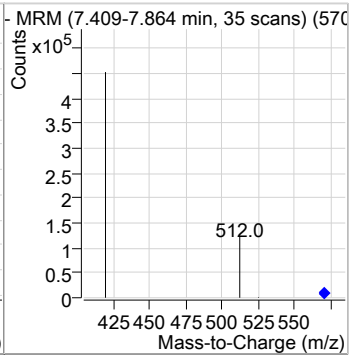


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	100.81	7.62	0.00	341770 (m)	570.0 -> 512.0	26.7	0.0	56.9

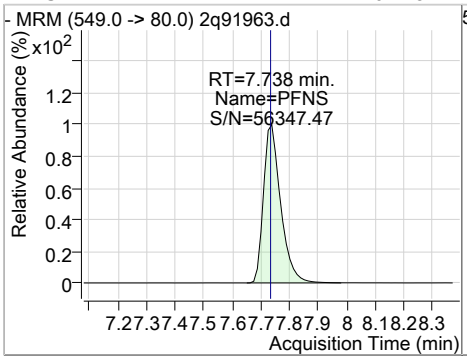


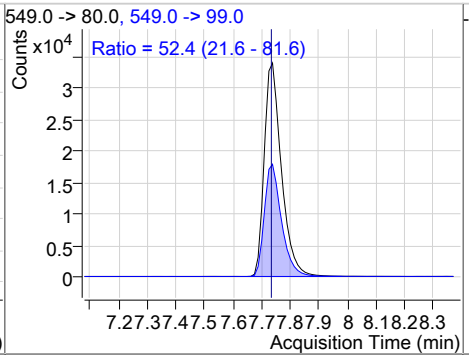


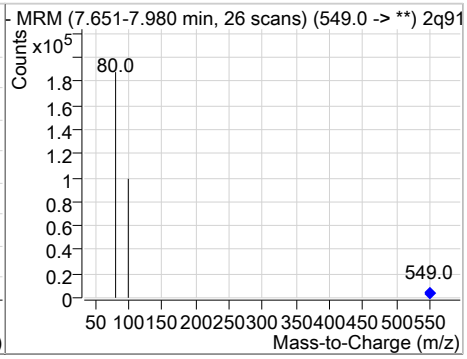




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	101.28	7.74	0.00	141609	549.0 -> 99.0	52.4	21.6	81.6

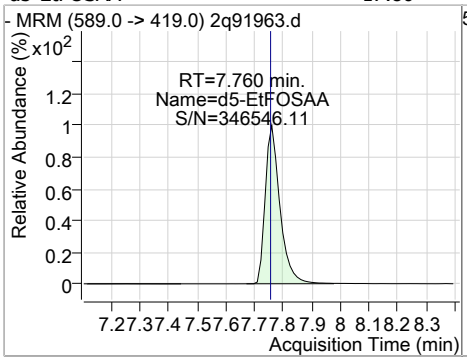


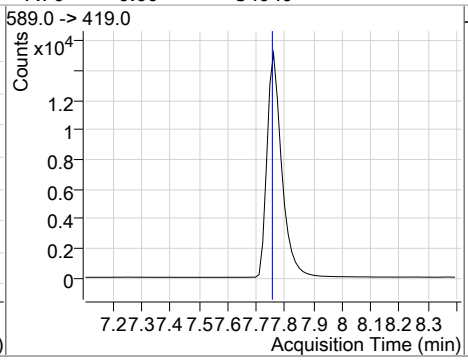


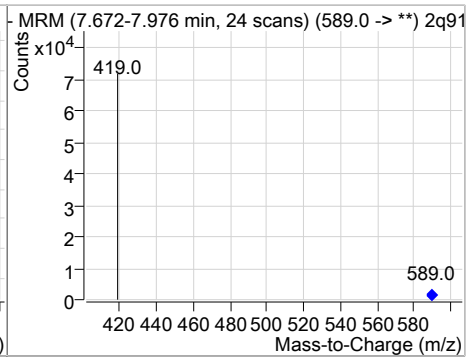


Perfluorinated Compounds by LC/MS/MS

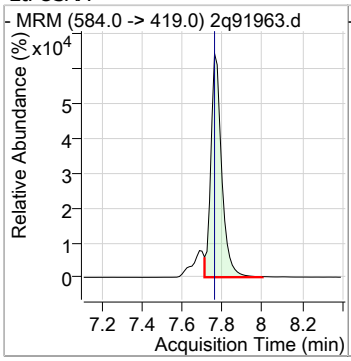
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	17.80	7.76	0.00	54040				

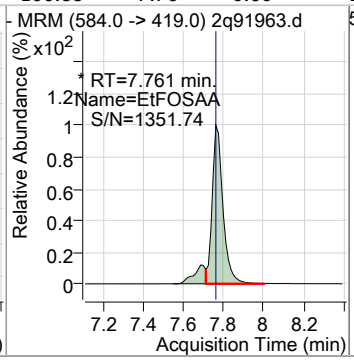


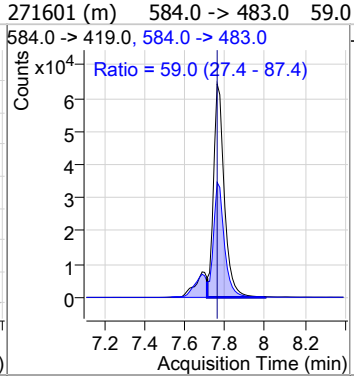


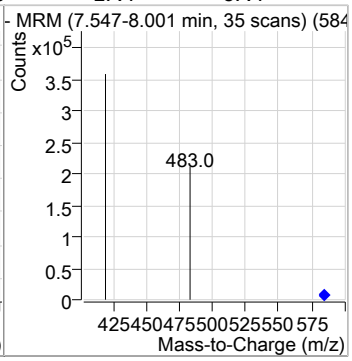


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	100.88	7.76	0.00	271601 (m)	584.0 -> 483.0	59.0	27.4	87.4

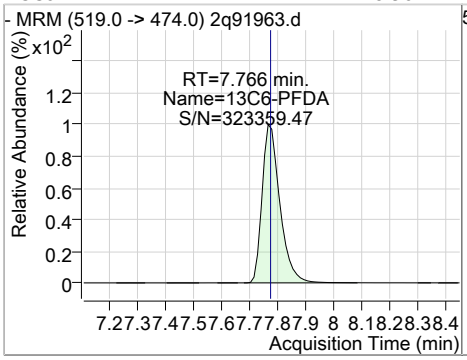


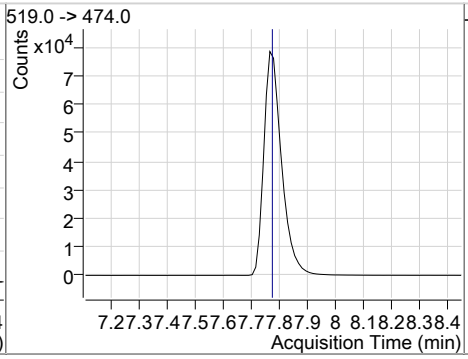


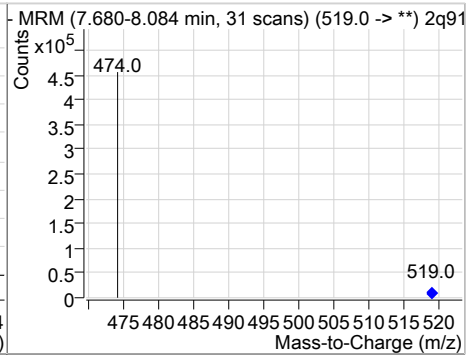




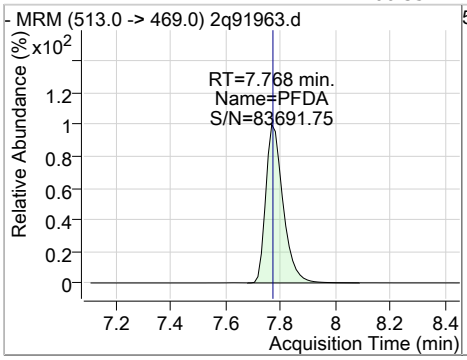
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.96	7.77	-0.01	345331				

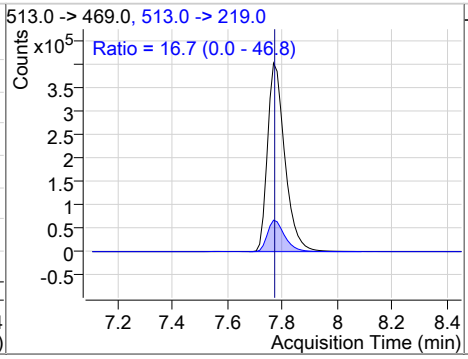


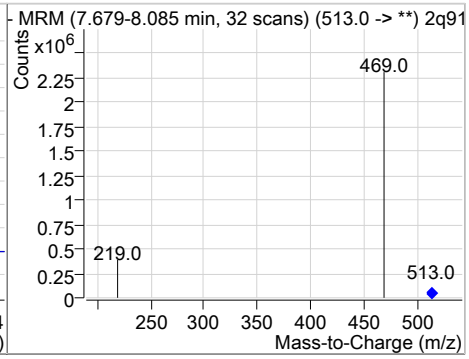




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	100.35	7.77	-0.01	1756066	513.0 -> 219.0	16.7	0.0	46.8

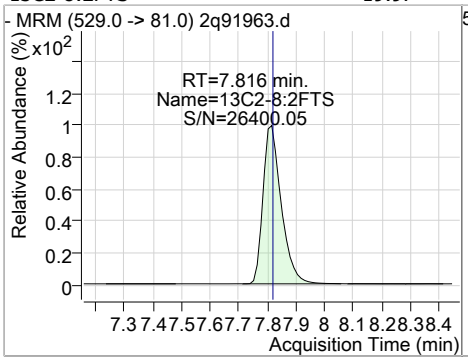


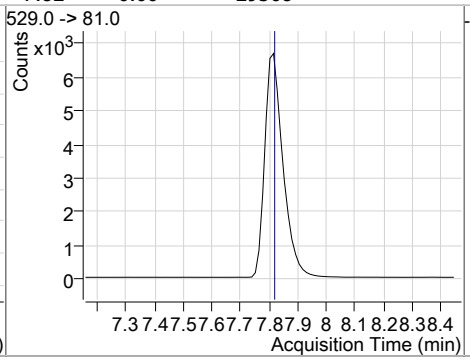


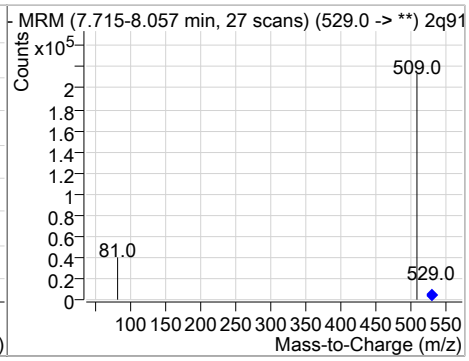


Perfluorinated Compounds by LC/MS/MS

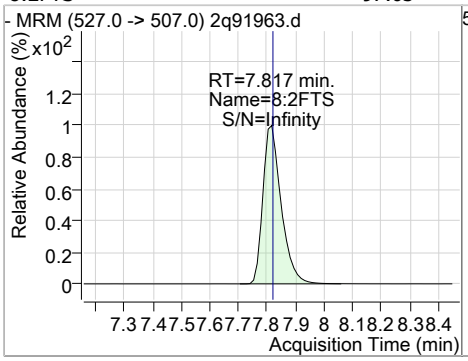
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.97	7.82	0.00	29568				

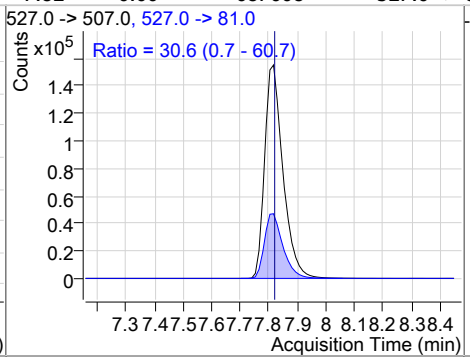


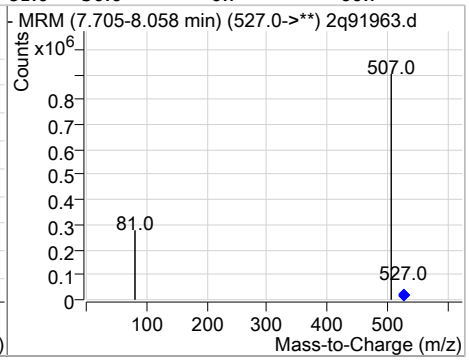




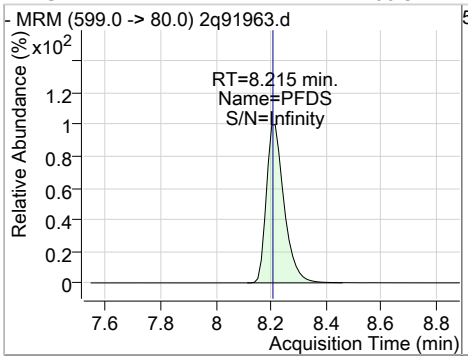
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	97.63	7.82	0.00	687608	527.0 -> 81.0	30.6	0.7	60.7

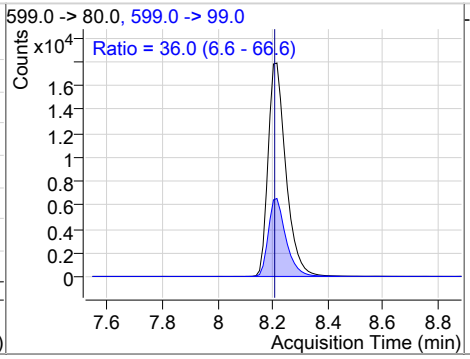


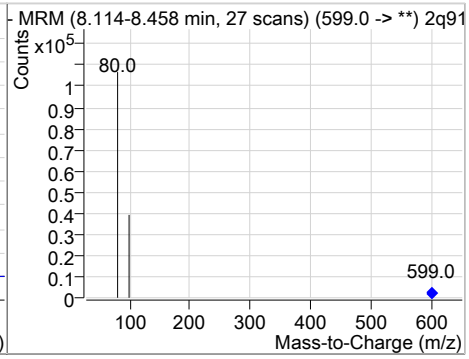




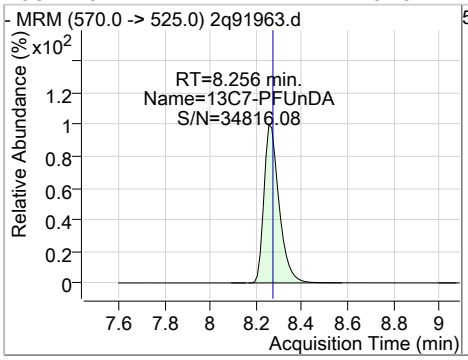
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	100.37	8.22	0.00	79916	599.0 -> 99.0	36.0	6.6	66.6

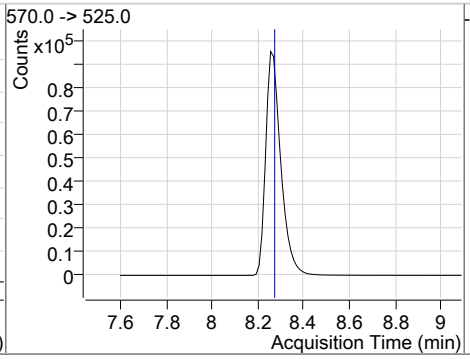


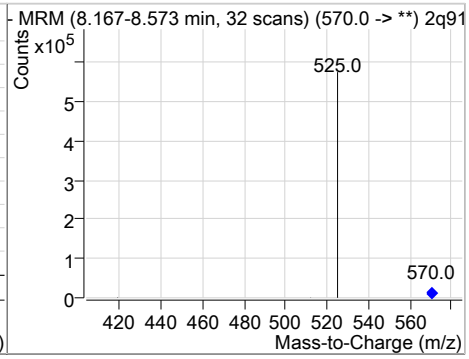




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.29	8.26	-0.01	436517				

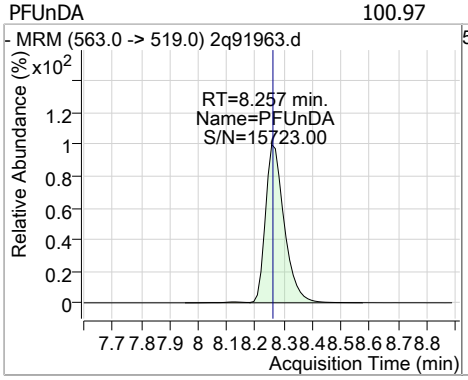


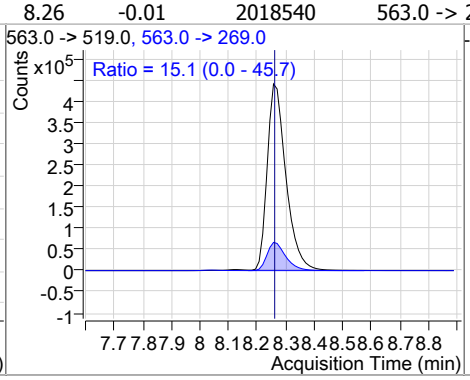


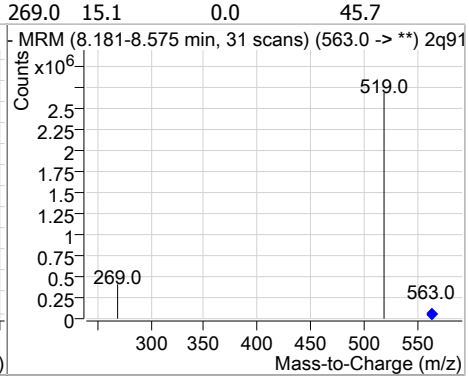


Perfluorinated Compounds by LC/MS/MS

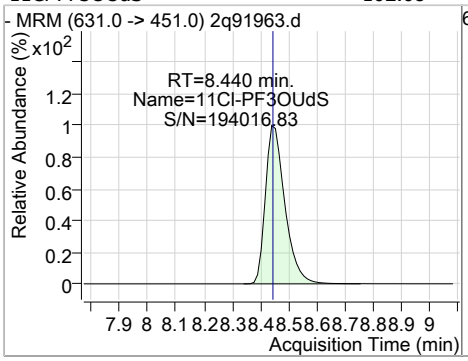
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	100.97	8.26	-0.01	2018540	563.0 -> 269.0	15.1	0.0	45.7

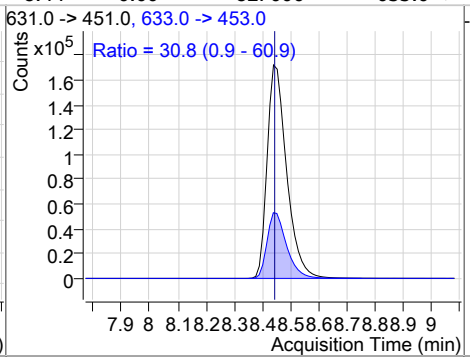


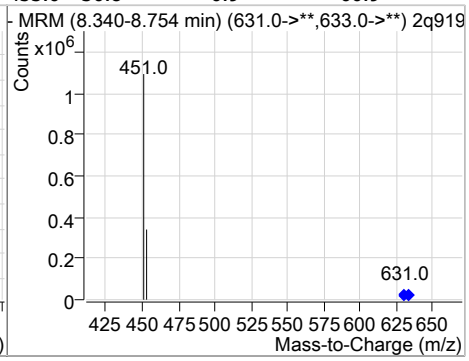




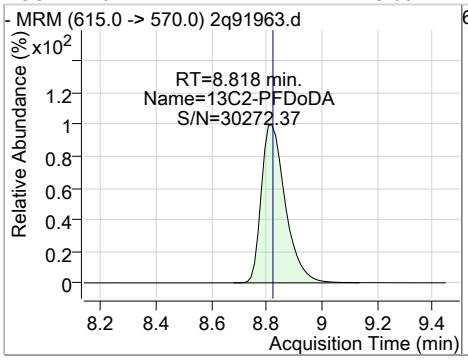
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	102.08	8.44	0.00	827006	633.0 -> 453.0	30.8	0.9	60.9

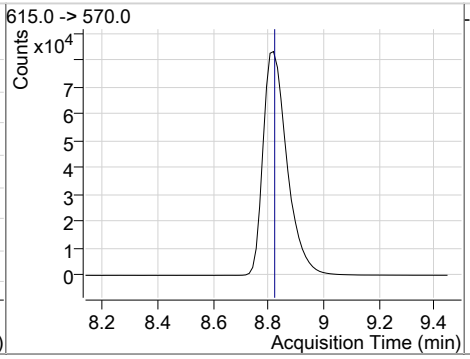


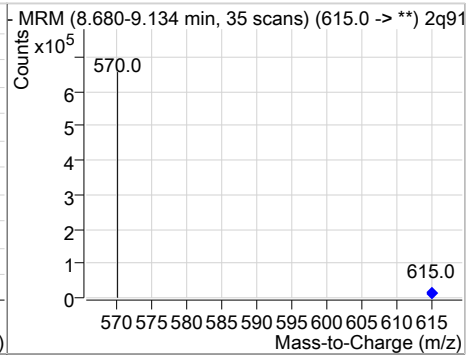




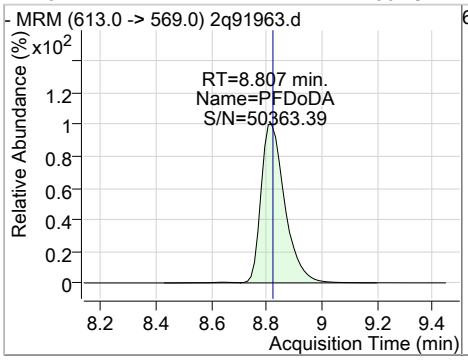
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.60	8.82	0.00	502547				

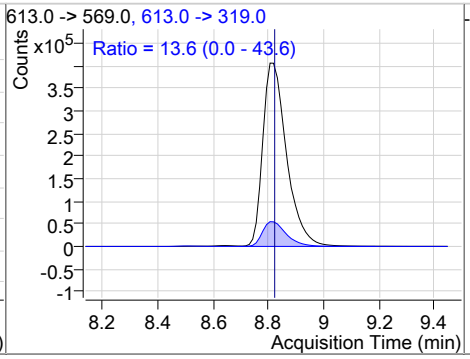


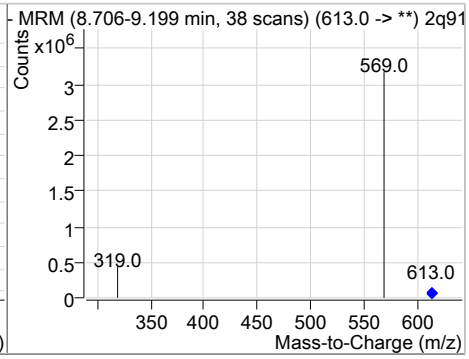




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	100.79	8.81	-0.01	2429691	613.0 -> 319.0	13.6	0.0	43.6

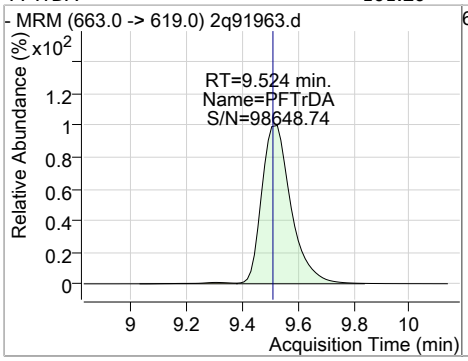


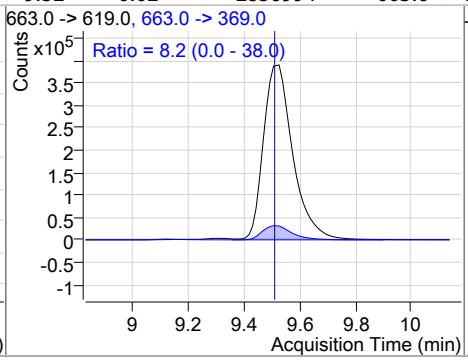


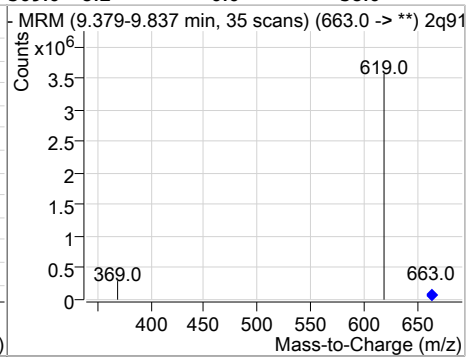


Perfluorinated Compounds by LC/MS/MS

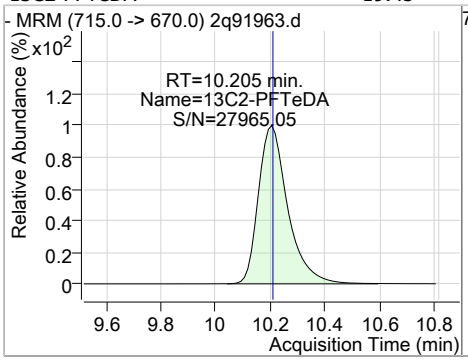
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	101.20	9.52	0.02	2856994	663.0 -> 369.0	8.2	0.0	38.0

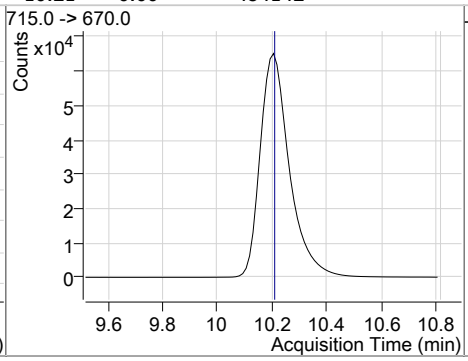


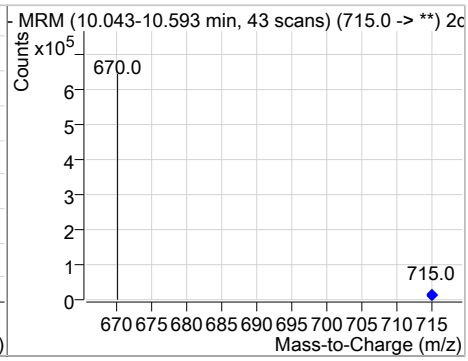




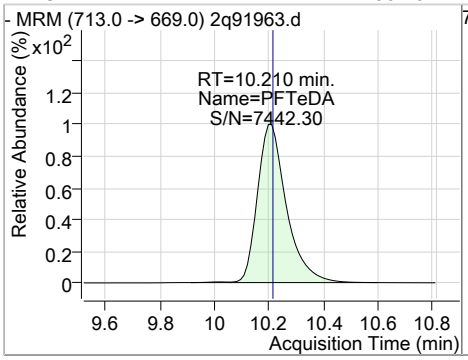
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.45	10.21	0.00	484142				

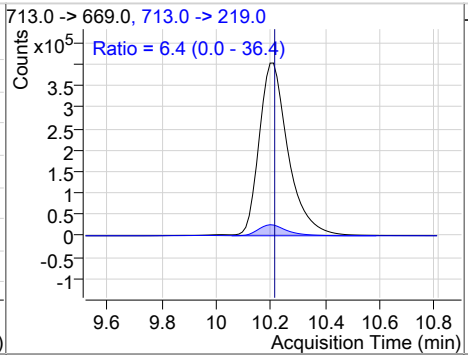


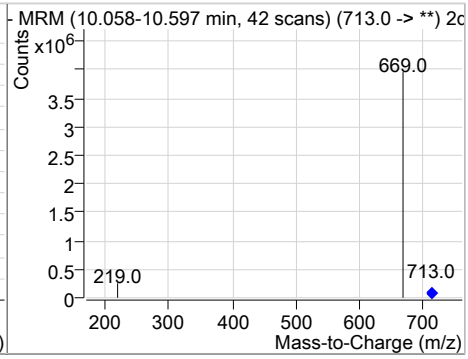




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	100.40	10.21	0.00	2959061	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-IC1287
Lab FileID: 2Q91963.D
Injection Time: 05/27/22 14:16
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:34 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 05/29/22 17:41

Perfluorinated Compounds by LC/MS/MS

Data File : 2q91965.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 5/27/2022 2:53:32 PM
Sample Name : icv1287-20
Vial : P1-B1
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1287.batch.bin
Sample Information : op91255,S2Q1287,250,,,1.0,1,water

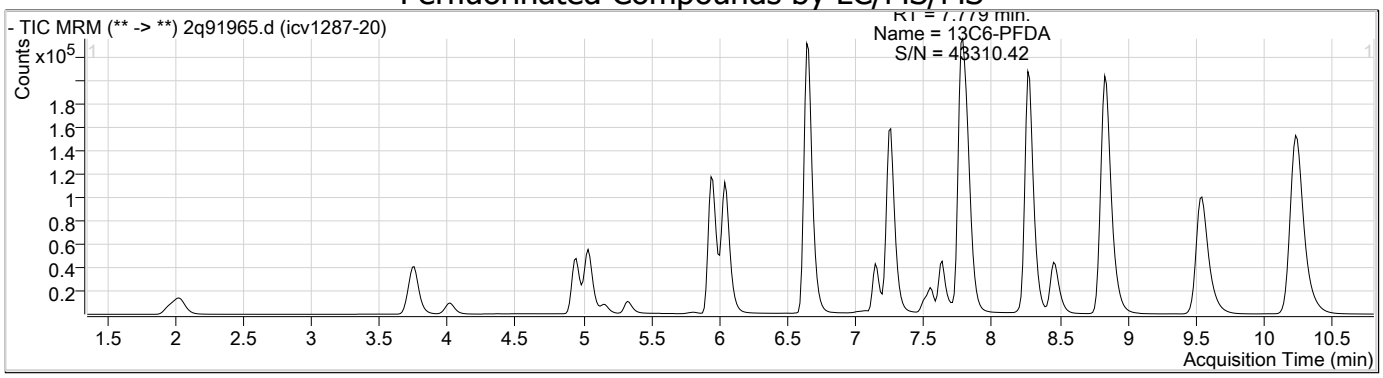
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.760	589.0 -> 419.0	60569	20.00	µg/L	0.000
M4-PFBA	2.027	217.0 -> 172.0	74689	20.00	µg/L	0.013
M5-PFPeA	3.761	268.0 -> 223.0	88402	20.00	µg/L	0.025
M5-PFHxA	5.039	318.0 -> 273.0	130271	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	178686	20.00	µg/L	0.013
M8-PFOA	6.661	421.0 -> 376.0	250070	20.00	µg/L	0.013
M9-PFNA	7.265	472.0 -> 427.0	284823	20.00	µg/L	0.013
M6-PFDA	7.779	519.0 -> 474.0	356946	20.00	µg/L	0.000
M7-PFUnDA	8.269	570.0 -> 525.0	433552	20.00	µg/L	0.000
M2-PFDoDA	8.832	615.0 -> 570.0	527080	20.00	µg/L	0.014
M2-PFTeDA	10.230	715.0 -> 670.0	491706	20.00	µg/L	0.025
M8-FOSA	7.149	506.0 -> 78.0	71696	20.00	µg/L	0.000
M3-PFBS	4.017	302.0 -> 99.0	9907	20.00	µg/L	0.013
M3-PFHxS	5.979	402.0 -> 99.0	14524	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	20658	20.00	µg/L	0.013
M2-4:2FTS	4.946	329.0 -> 81.0	9078	20.00	µg/L	0.013
M2-6:2FTS	6.646	429.0 -> 81.0	20029	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	28787	20.00	µg/L	0.013
M3-MeFOSAA	7.635	573.0 -> 419.0	74795	20.00	µg/L	0.013
M3-HFPO-DA	5.332	287.0 -> 169.0	5010	20.00	µg/L	0.013
M3-MeFOSA	7.565	515.0 -> 169.0	28747	20.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.946	329.0 -> 81.0	9078	19.51	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%		
13C2-6:2FTS	6.646	429.0 -> 81.0	20029	19.37	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C2-8:2FTS	7.828	529.0 -> 81.0	28787	19.44	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%		
13C2-PFDoDA	8.832	615.0 -> 570.0	527080	19.51	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%		
13C2-PFTeDA	10.230	715.0 -> 670.0	491706	19.75	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C3-PFBS	4.017	302.0 -> 99.0	9907	19.48	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C3-PFHxS	5.979	402.0 -> 99.0	14524	20.37	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
13C4-PFBA	2.027	217.0 -> 172.0	74689	19.33	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%		
13C4-PFHpA	5.941	367.0 -> 322.0	178686	19.25	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
d5-EtFOSAA	7.760	589.0 -> 419.0	60569	19.95	ng/ml	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C5-PFHxA	5.039	318.0 -> 273.0	130271	19.29	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C5-PFPeA	3.761	268.0 -> 223.0	88402	19.39	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

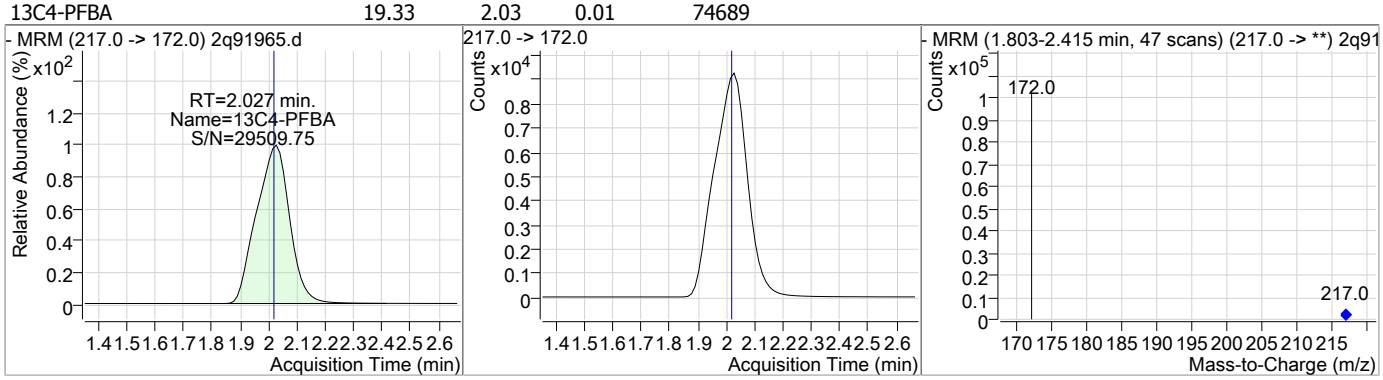
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
13C6-PFDA	7.779	519.0 -> 474.0	356946	19.60	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%			
13C7-PFUnDA	8.269	570.0 -> 525.0	433552	19.16	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%			
13C8-FOSA	7.149	506.0 -> 78.0	71696	19.48	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%			
13C8-PFOA	6.661	421.0 -> 376.0	250070	19.42	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%			
13C8-PFOS	7.237	507.0 -> 99.0	20658	19.91	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%			
13C9-PFNA	7.265	472.0 -> 427.0	284823	19.53	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%			
d3-MeFOSAA	7.635	573.0 -> 419.0	74795	19.50	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%			
13C3-HFPO-DA	5.332	287.0 -> 169.0	5010	19.24	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%			
d3-MeFOSA	7.565	515.0 -> 169.0	28747	20.54	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%			
Target Compounds							**QValue**
4:2FTS	4.950	327.0 -> 307.0	86979	18.29	µg/L		100
6:2FTS	6.647	427.0 -> 407.0	136102	18.43	µg/L		99
8:2FTS	7.829	527.0 -> 507.0	137040	19.99	µg/L		99
EtFOSAA	7.774	584.0 -> 419.0	58086	19.25	µg/L	m	99
FOSA	7.150	498.0 -> 78.0	76378	20.29	µg/L		100
MeFOSAA	7.636	570.0 -> 419.0	68721	20.00	µg/L	m	97
PFBA	2.021	213.0 -> 169.0	38715	20.21	µg/L		100
PFBS	4.019	299.0 -> 80.0	27481	16.64	µg/L		99
PFDA	7.780	513.0 -> 469.0	356143	19.69	µg/L		99
PFDoDA	8.833	613.0 -> 569.0	540897	21.39	µg/L		99
PFDS	8.228	599.0 -> 80.0	15475	19.57	µg/L		99
PFHpA	5.943	363.0 -> 319.0	287111	19.65	µg/L		100
PFHpS	6.657	449.0 -> 80.0	31846	18.66	µg/L		99
PFHxA	5.041	313.0 -> 269.0	92000	19.09	µg/L		100
PFHxS	5.980	399.0 -> 80.0	30808	16.90	µg/L	m	99
PFNA	7.265	463.0 -> 419.0	287451	18.15	µg/L		99
PFNS	7.751	549.0 -> 80.0	26654	18.32	µg/L		99
PFOA	6.662	413.0 -> 369.0	289127	21.29	µg/L		99
PFOS	7.238	499.0 -> 80.0	34879	19.29	µg/L	m	98
PFPeA	3.764	263.0 -> 219.0	134611	19.77	µg/L		100
PFPeS	5.158	349.0 -> 80.0	21054	18.64	µg/L		99
PFTeDA	10.235	713.0 -> 669.0	567783	18.97	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	638360	21.56	µg/L		99
PFUnDA	8.270	563.0 -> 519.0	415181	20.91	µg/L		99
11Cl-PF3OUdS	8.453	631.0 -> 451.0	155980	18.36	µg/L		99
9Cl-PF3ONS	7.511	531.0 -> 351.0	35519	18.36	µg/L		97
ADONA	6.044	377.0 -> 251.0	345436	18.38	µg/L		99
HFPO-DA	5.326	329.0 -> 169.0	35881	19.86	µg/L		99
MeFOSA	-	512.0 -> 219.0	-	N.D.			

= Qualifier out of range, m = manually integrated, + = Area summed

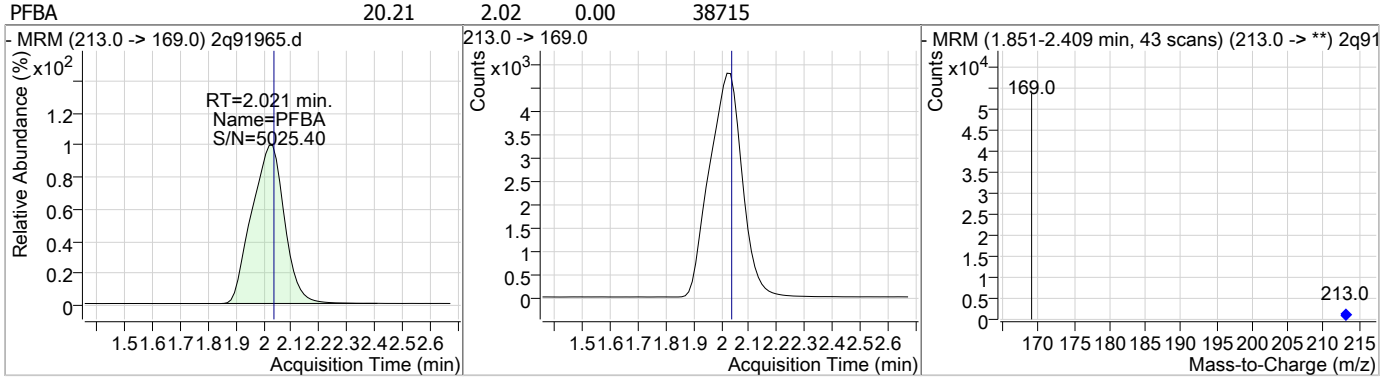
Perfluorinated Compounds by LC/MS/MS



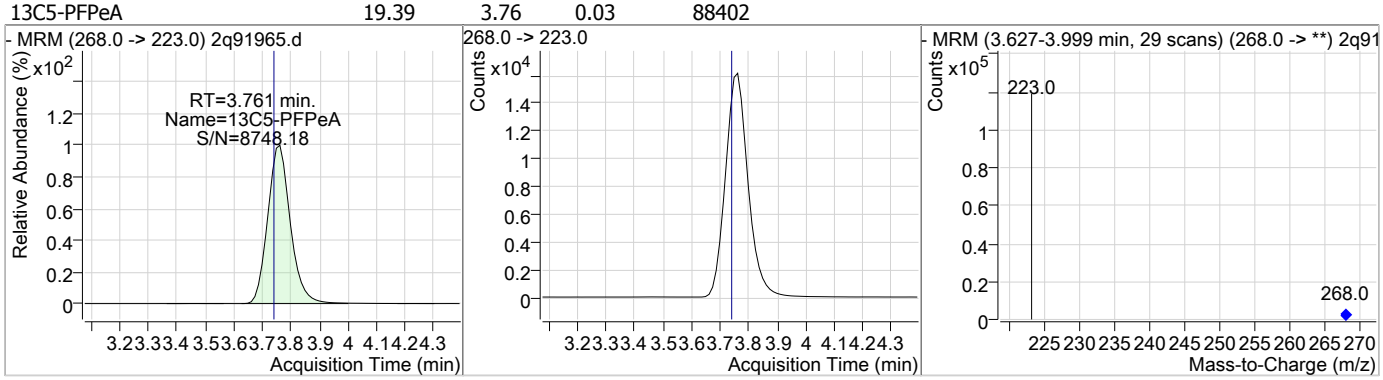
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.33	2.03	0.01	74689				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.21	2.02	0.00	38715				

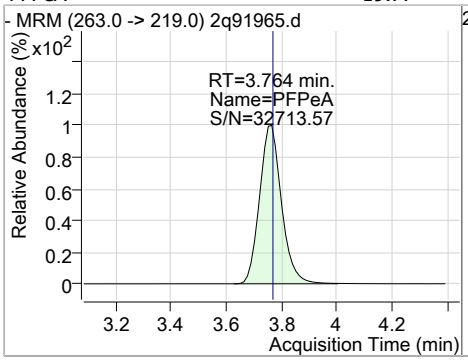


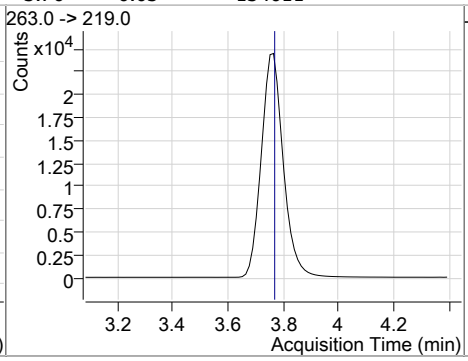
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.39	3.76	0.03	88402				

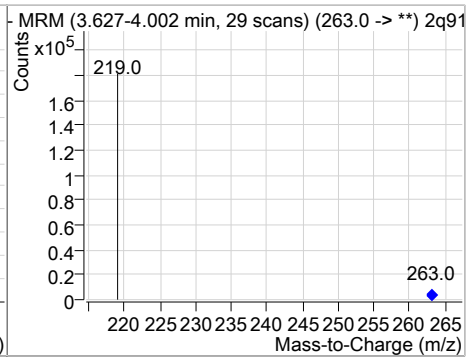


Perfluorinated Compounds by LC/MS/MS

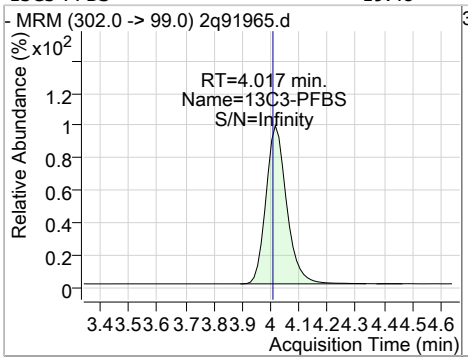
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.77	3.76	0.03	134611				

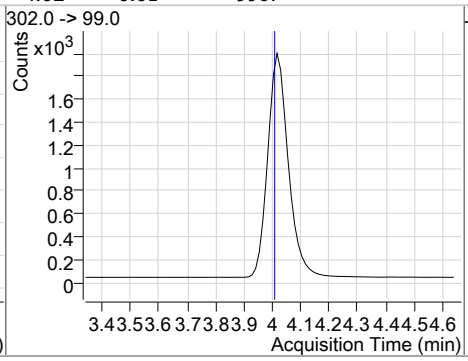


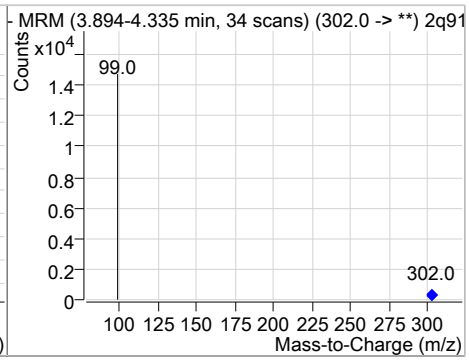




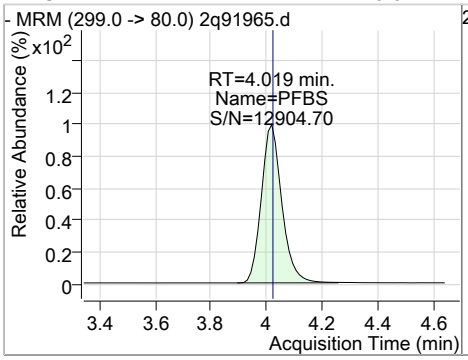
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.48	4.02	0.01	9907				

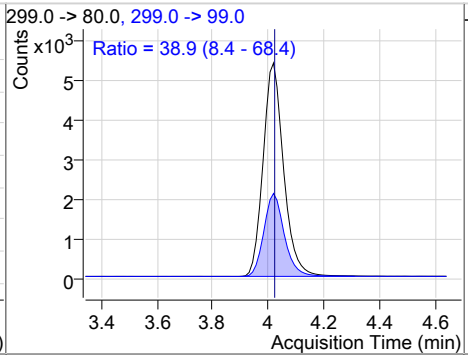


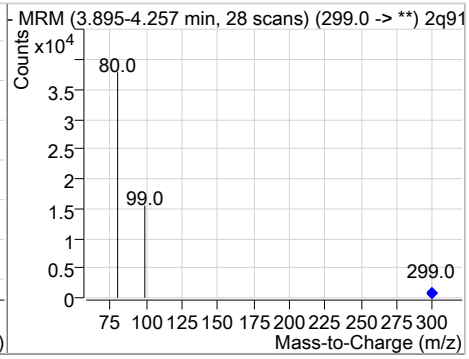




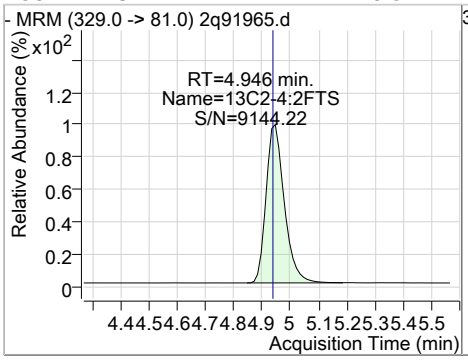
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	16.64	4.02	0.01	27481	299.0 -> 99.0	38.9	8.4	68.4

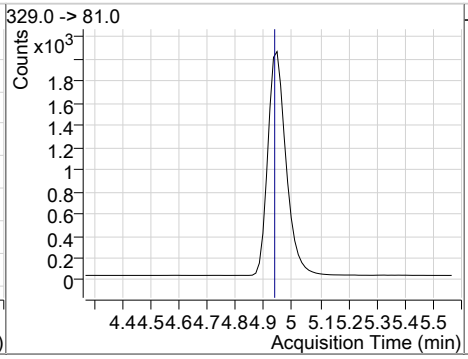


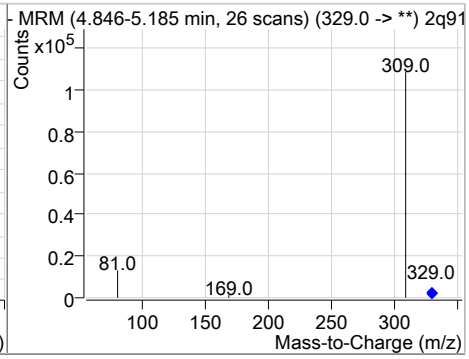




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.51	4.95	0.01	9078				

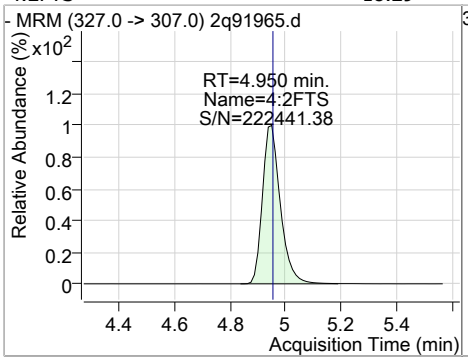


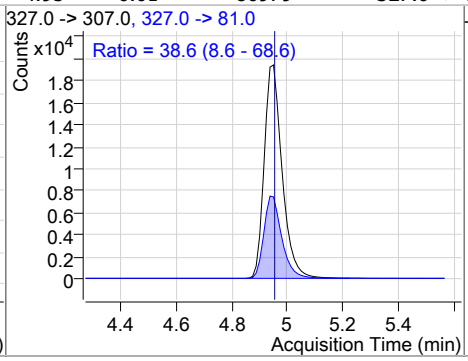


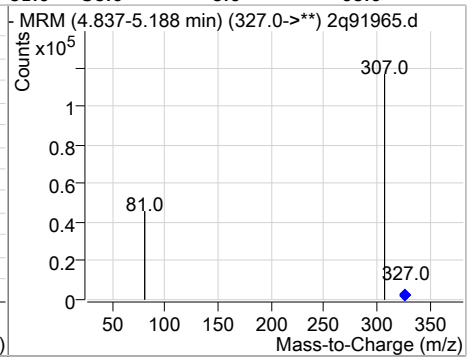


Perfluorinated Compounds by LC/MS/MS

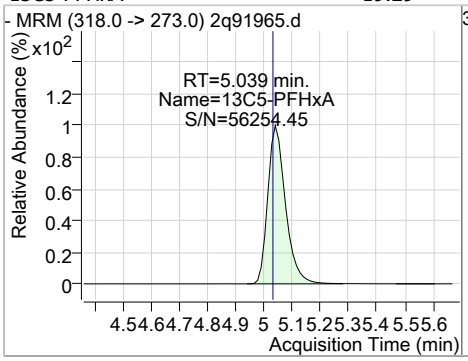
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	18.29	4.95	0.01	86979	327.0 -> 81.0	38.6	8.6	68.6

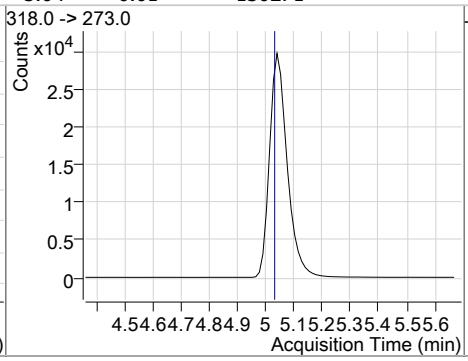


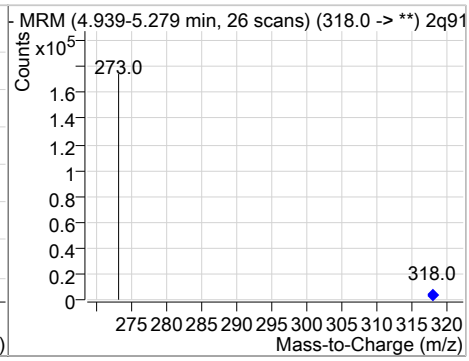




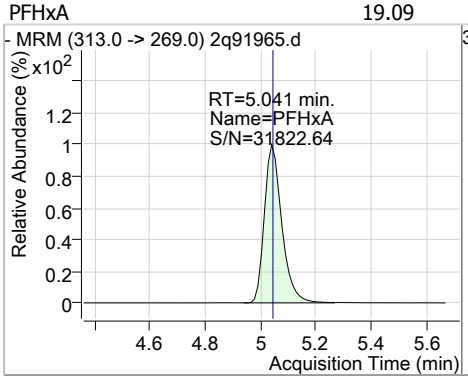
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.29	5.04	0.01	130271				

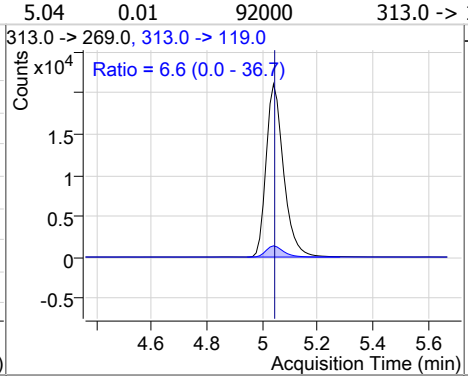


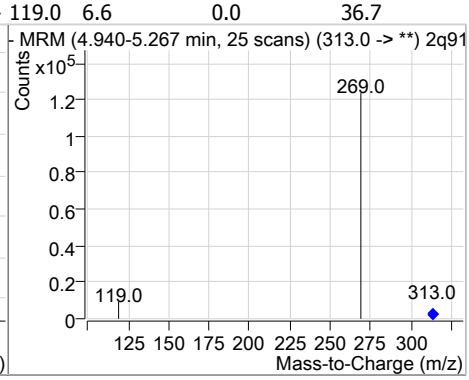




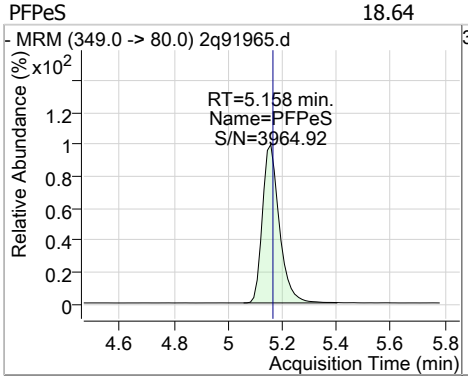
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.09	5.04	0.01	92000	313.0 -> 119.0	6.6	0.0	36.7

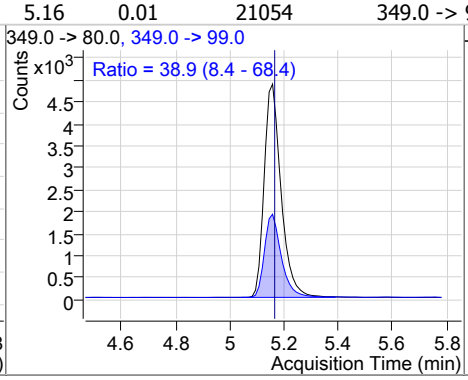


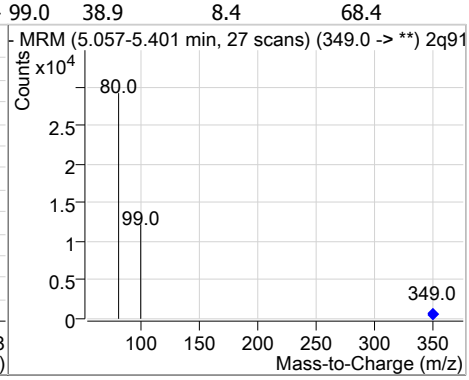




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	18.64	5.16	0.01	21054	349.0 -> 99.0	38.9	8.4	68.4

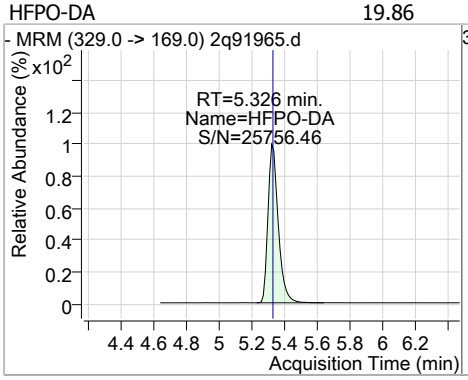


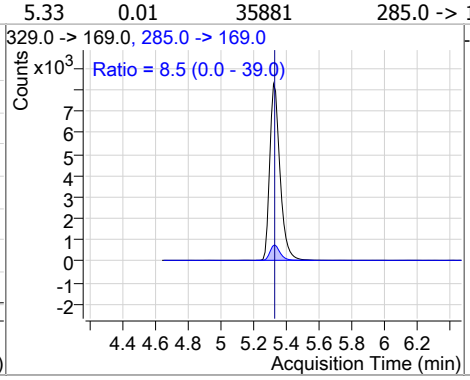


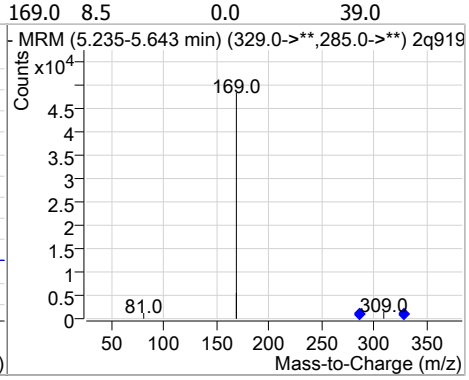


Perfluorinated Compounds by LC/MS/MS

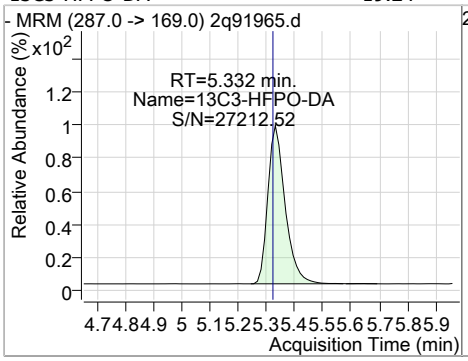
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.86	5.33	0.01	35881	285.0 -> 169.0	8.5	0.0	39.0

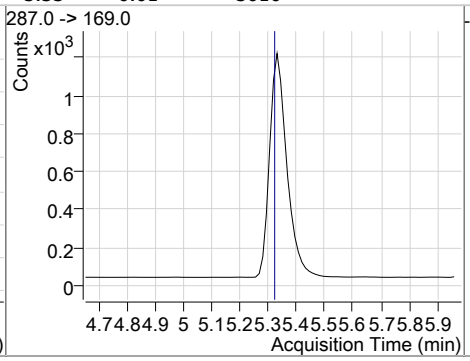


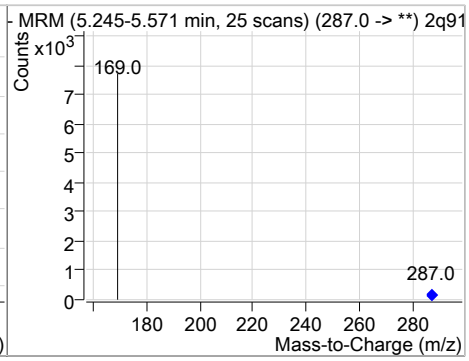




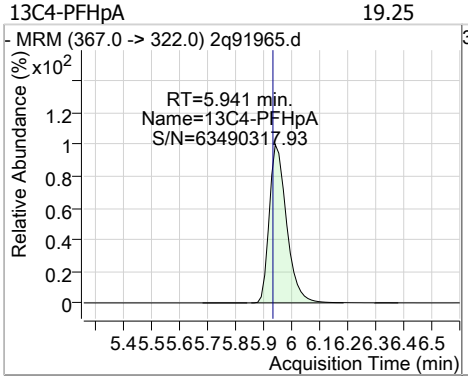
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.24	5.33	0.01	5010				

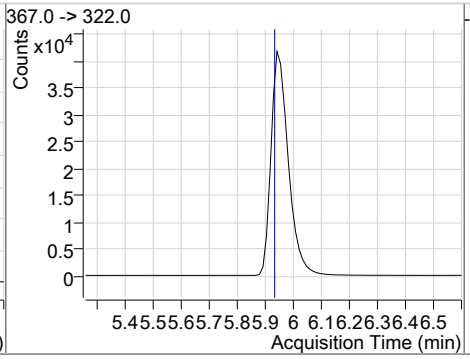


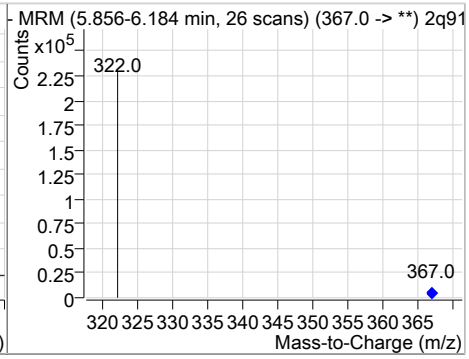




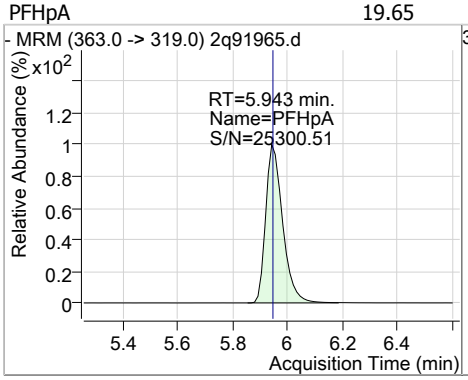
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.25	5.94	0.01	178686				

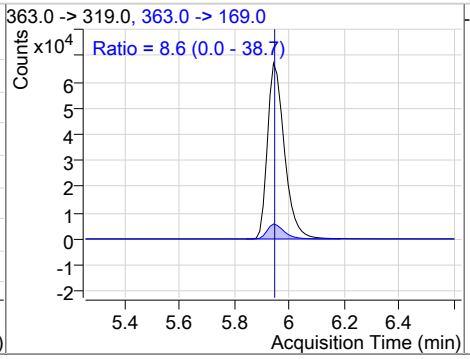


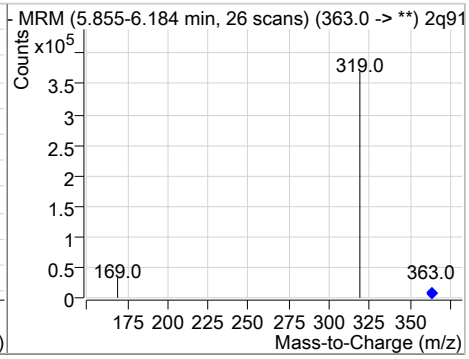




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.65	5.94	0.01	287111	363.0 -> 169.0	8.6	0.0	38.7

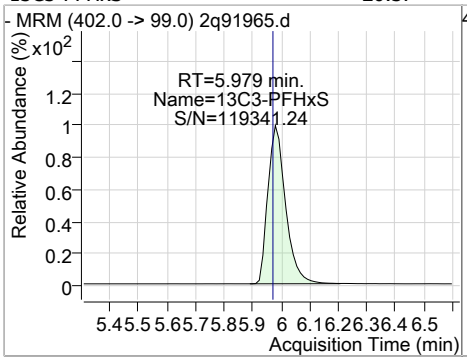


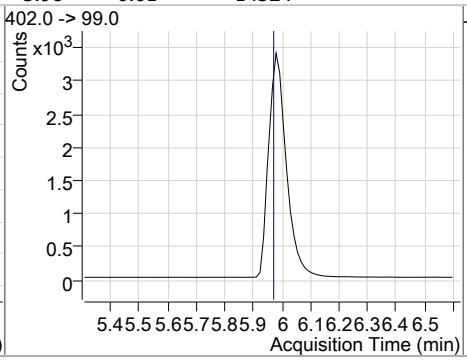


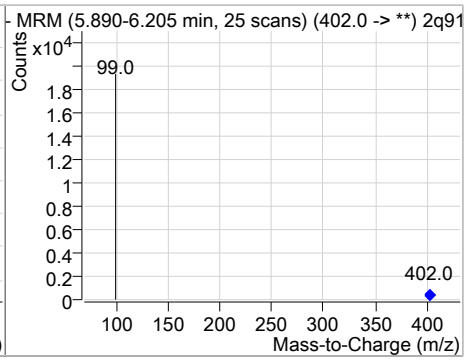


Perfluorinated Compounds by LC/MS/MS

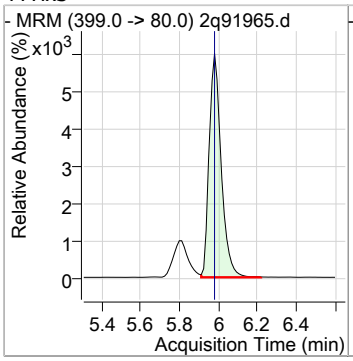
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.37	5.98	0.01	14524				

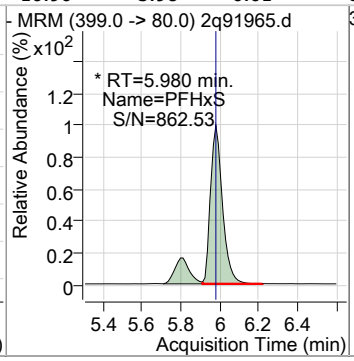


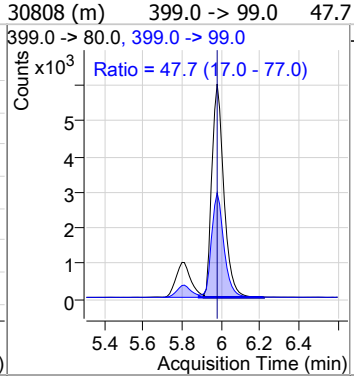


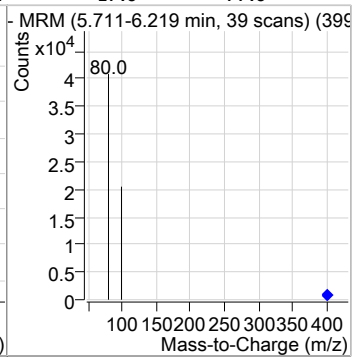


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	16.90	5.98	0.01	30808 (m)	399.0 -> 99.0	47.7	17.0	77.0

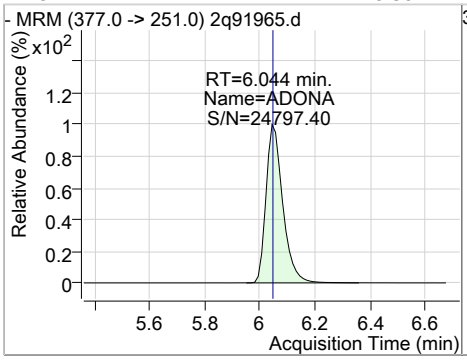


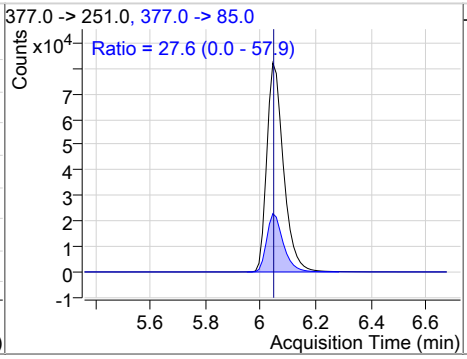


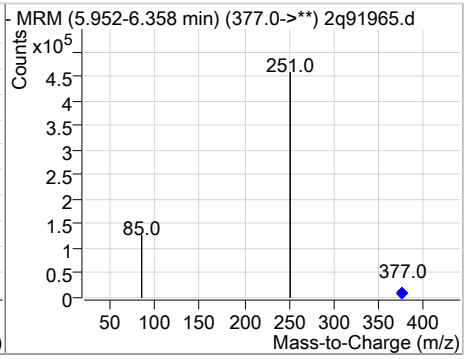




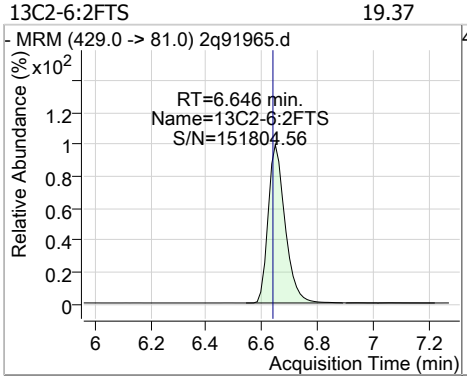
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	18.38	6.04	0.01	345436	377.0 -> 85.0	27.6	0.0	57.9

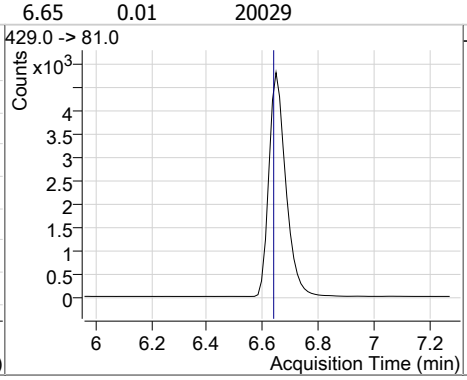


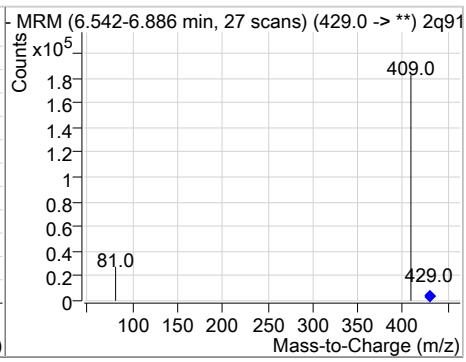




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.37	6.65	0.01	20029				

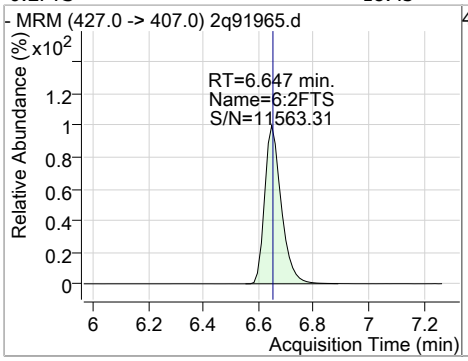


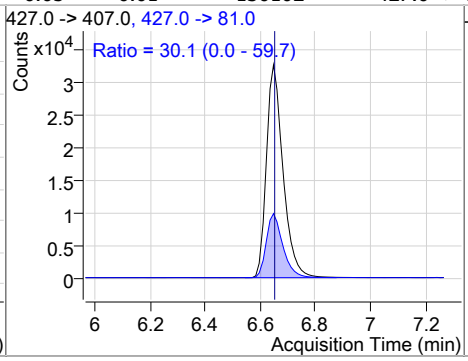


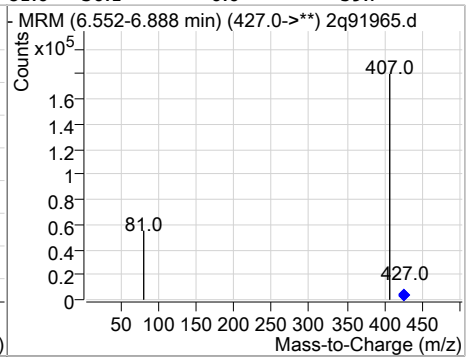


Perfluorinated Compounds by LC/MS/MS

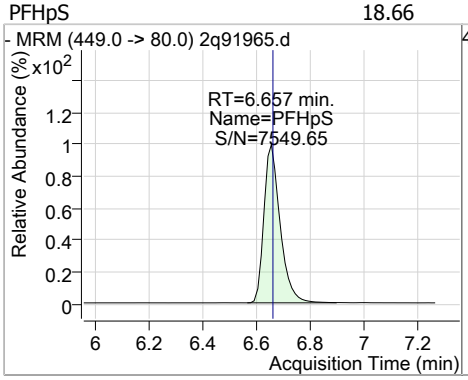
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.43	6.65	0.01	136102	427.0 -> 81.0	30.1	0.0	59.7

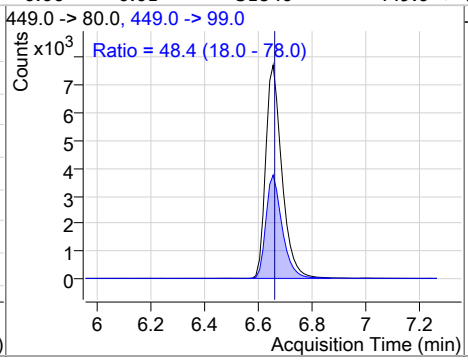


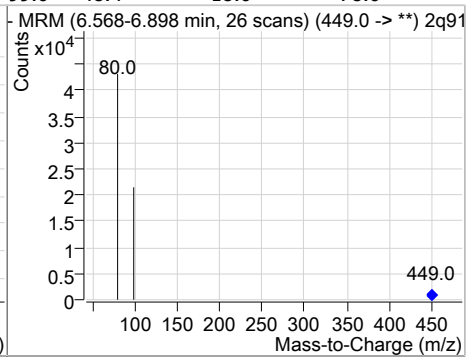




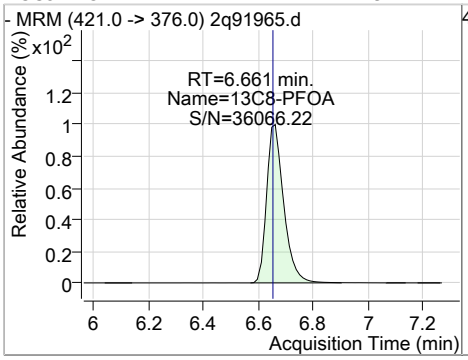
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	18.66	6.66	0.01	31846	449.0 -> 99.0	48.4	18.0	78.0

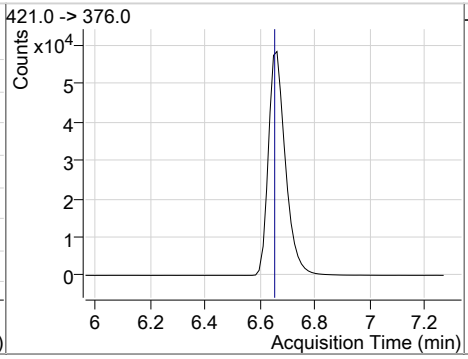


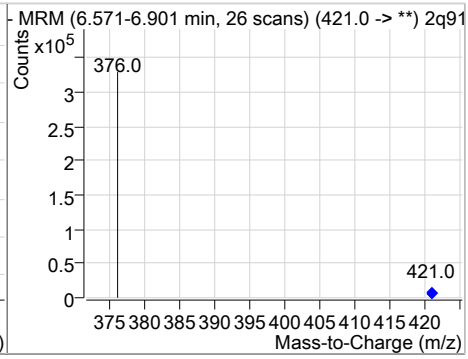




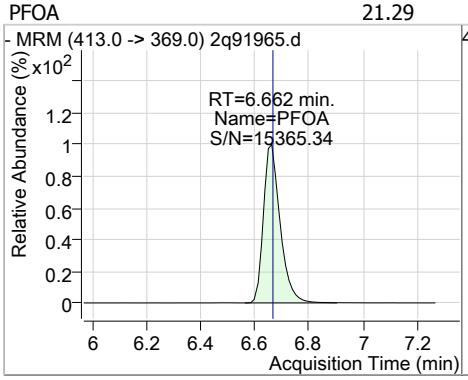
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.42	6.66	0.01	250070				

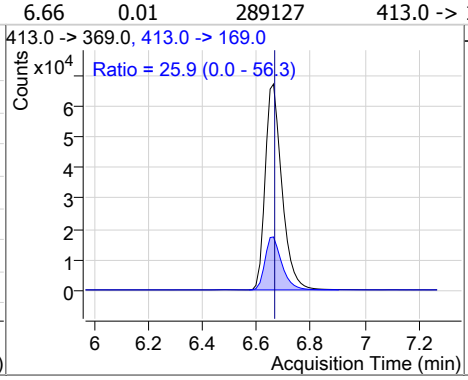


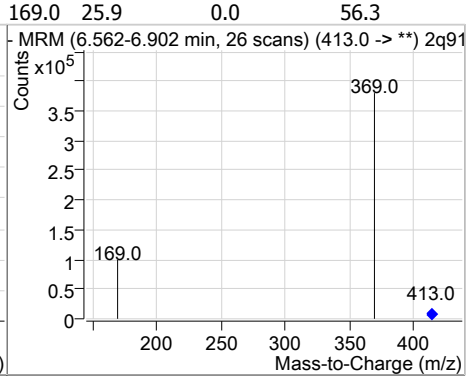




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	21.29	6.66	0.01	289127	413.0 -> 169.0	25.9	0.0	56.3

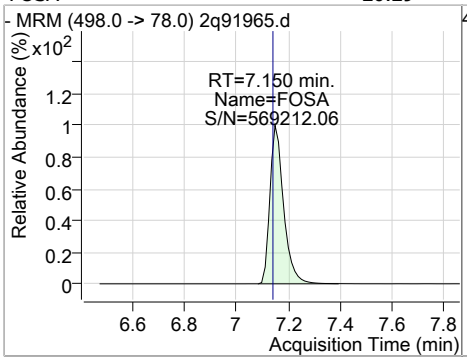


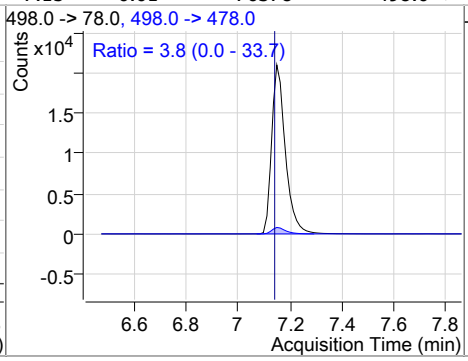


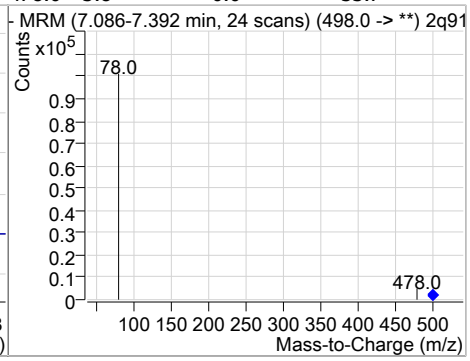


Perfluorinated Compounds by LC/MS/MS

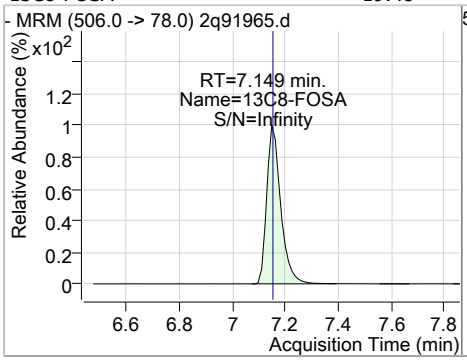
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.29	7.15	0.01	76378	498.0 -> 478.0	3.8	0.0	33.7

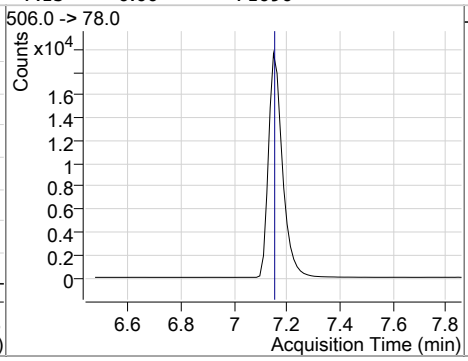


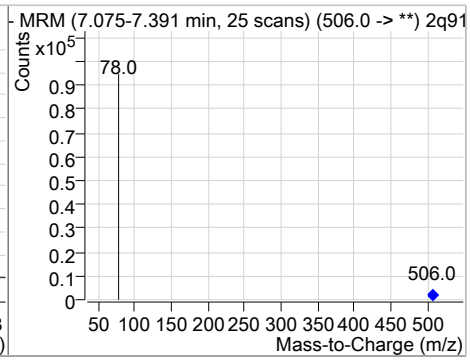




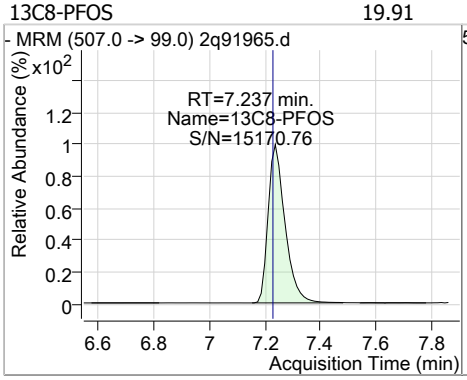
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.48	7.15	0.00	71696				

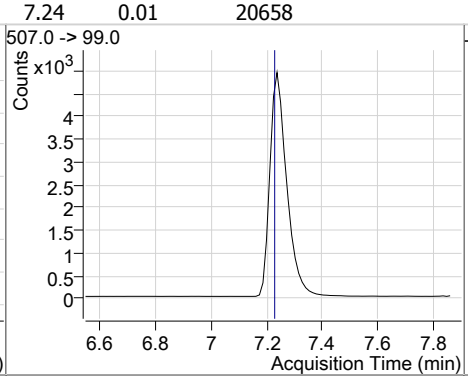


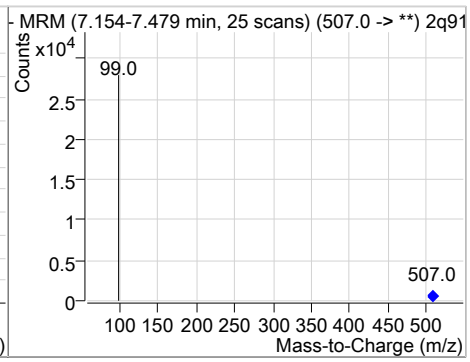




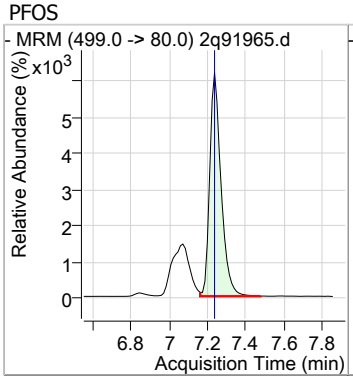
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.91	7.24	0.01	20658				

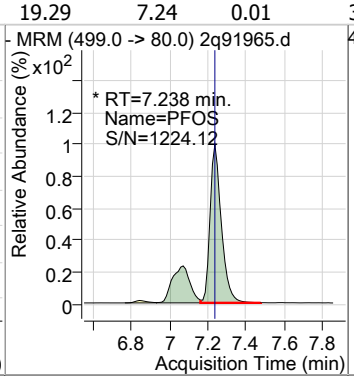


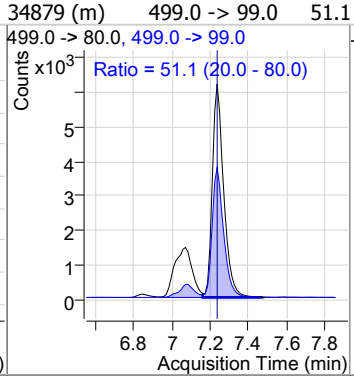


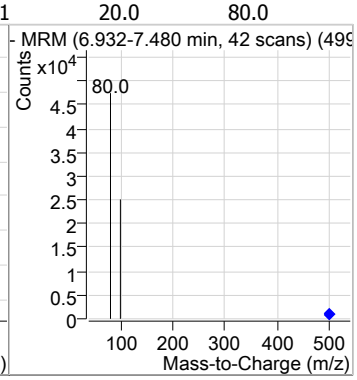


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.29	7.24	0.01	34879 (m)	499.0 -> 99.0	51.1	20.0	80.0



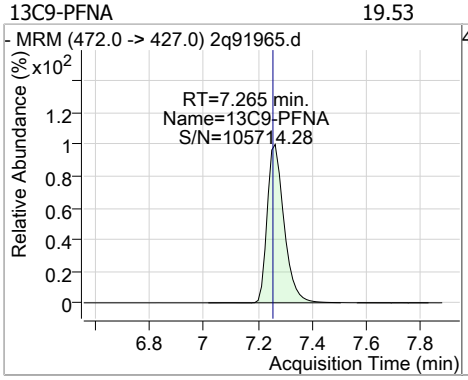


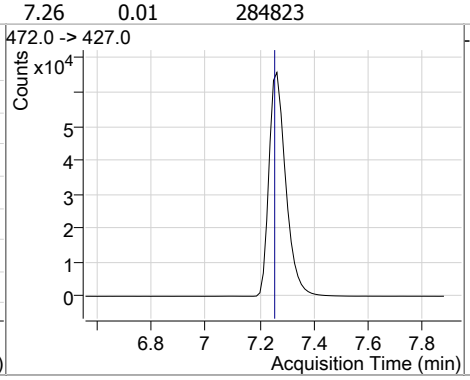


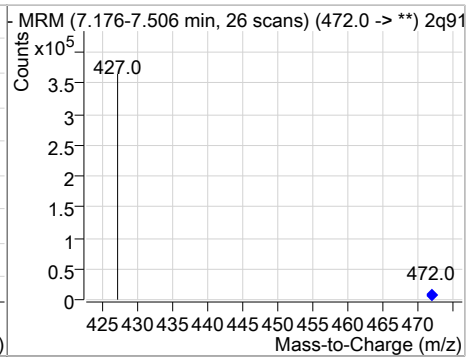


Perfluorinated Compounds by LC/MS/MS

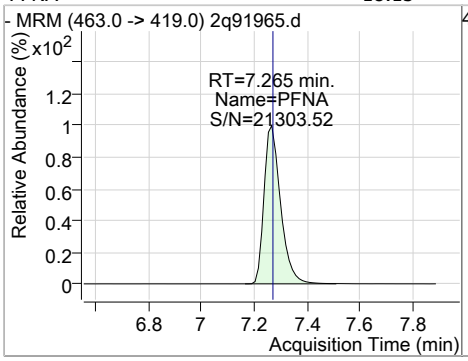
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.53	7.26	0.01	284823				

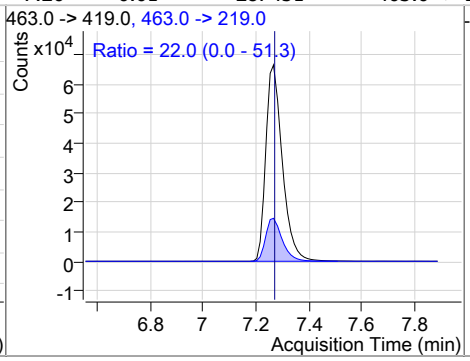


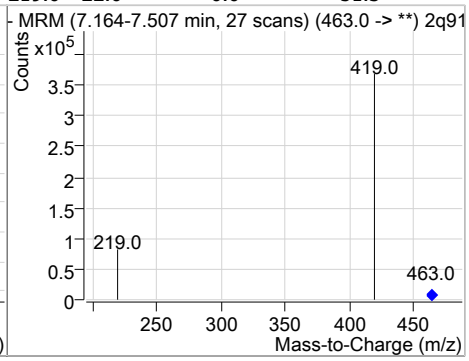




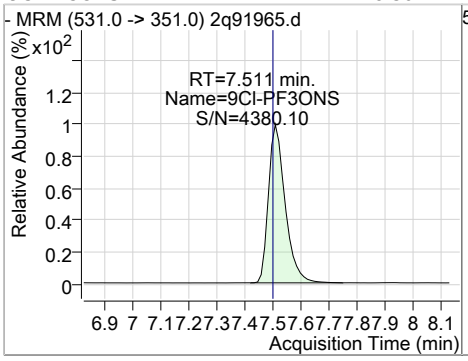
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	18.15	7.26	0.01	287451	463.0 -> 219.0	22.0	0.0	51.3

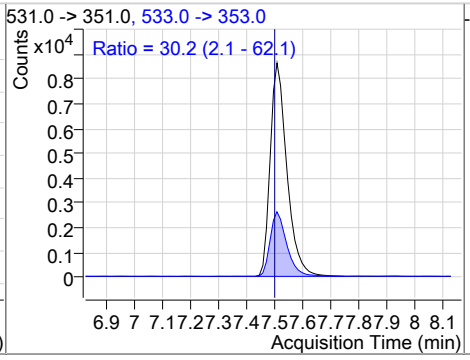


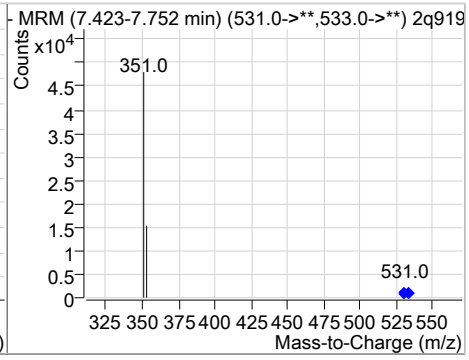




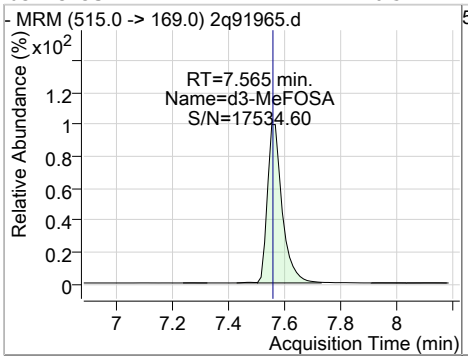
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.36	7.51	0.01	35519	533.0 -> 353.0	30.2	2.1	62.1

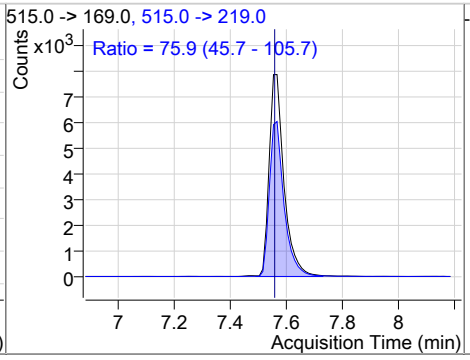


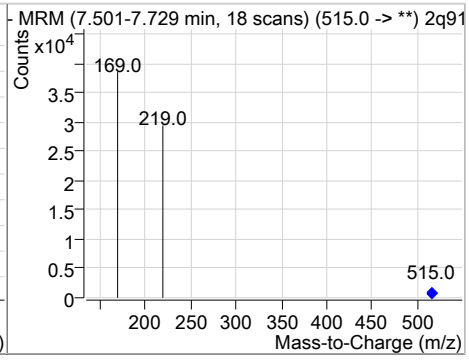




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	20.54	7.56	0.01	28747	515.0 -> 219.0	75.9	45.7	105.7

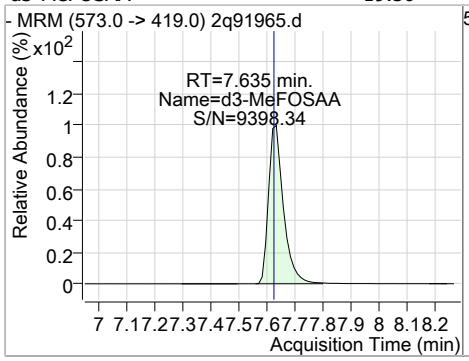


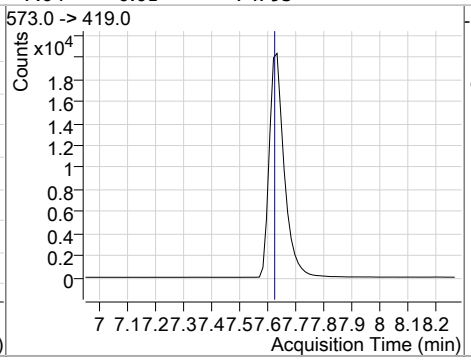


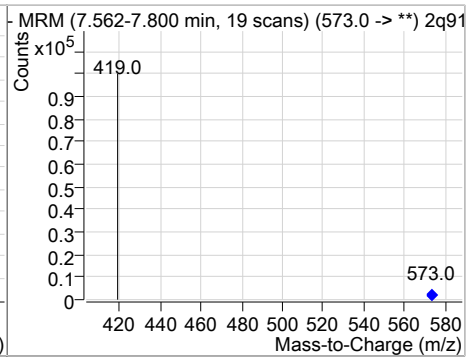


Perfluorinated Compounds by LC/MS/MS

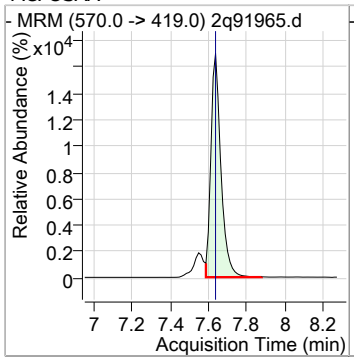
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.50	7.64	0.01	74795				

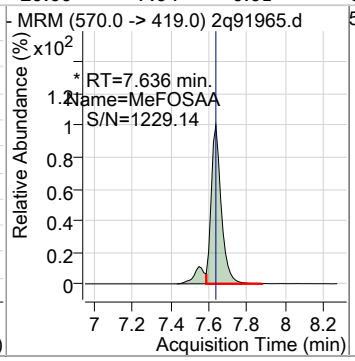


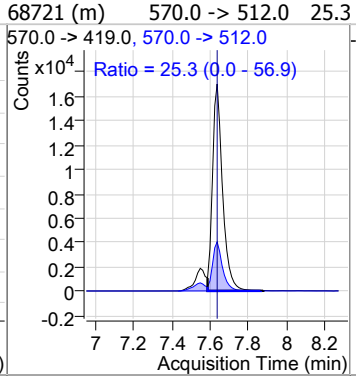


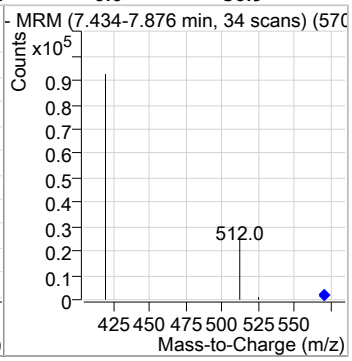


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.00	7.64	0.01	68721 (m)	570.0 -> 512.0	25.3	0.0	56.9

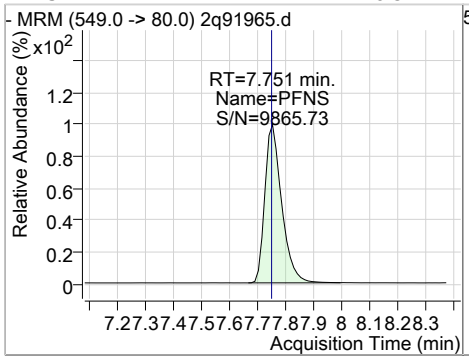


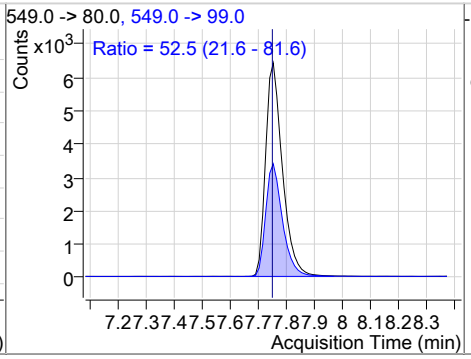


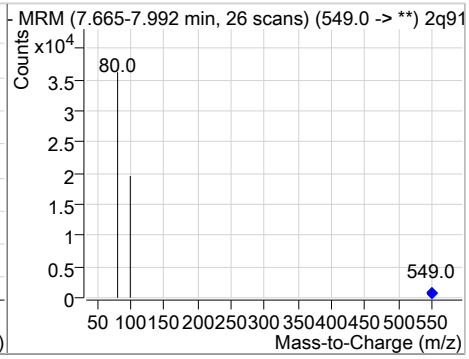




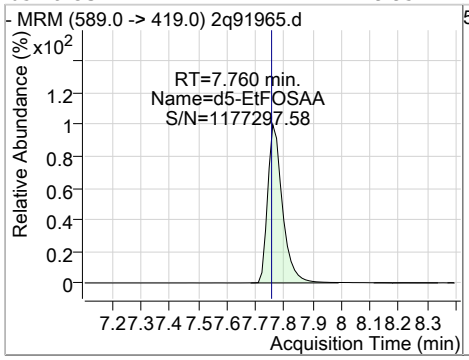
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.32	7.75	0.01	26654	549.0 -> 99.0	52.5	21.6	81.6

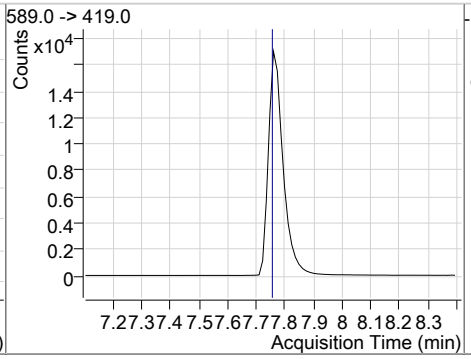


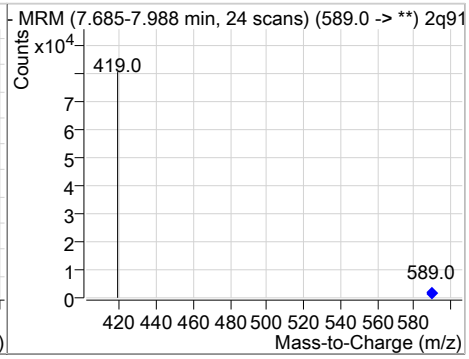




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	19.95	7.76	0.00	60569				

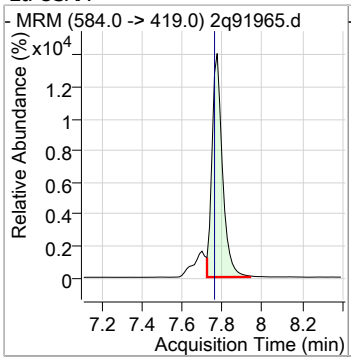


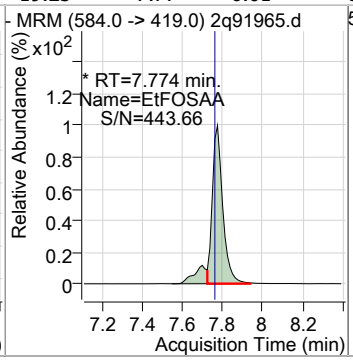


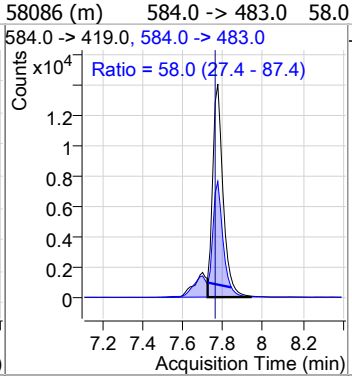


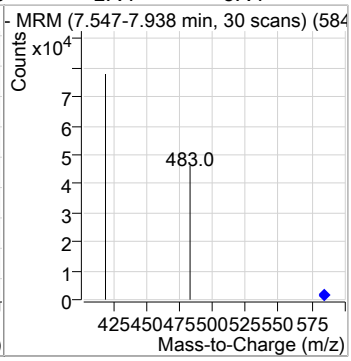
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.25	7.77	0.01	58086 (m)	584.0 -> 483.0	58.0	27.4	87.4

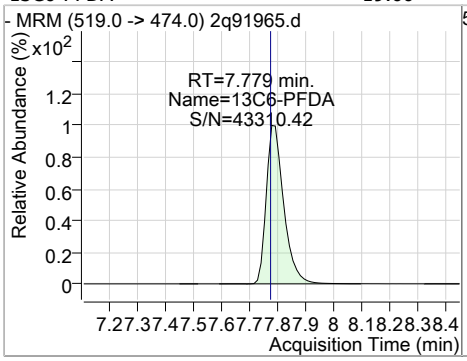


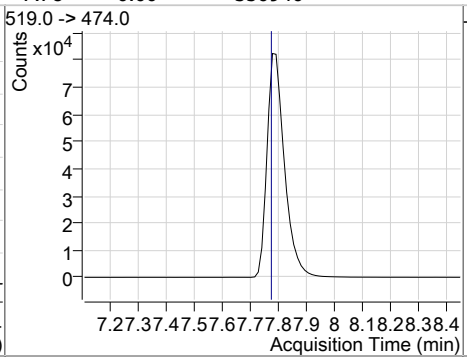


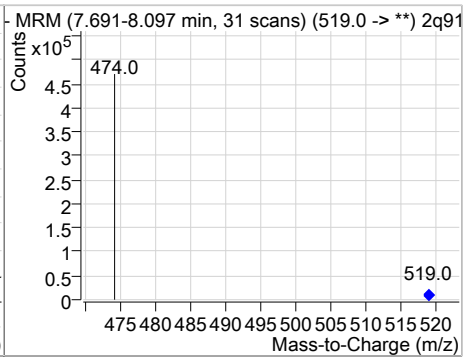




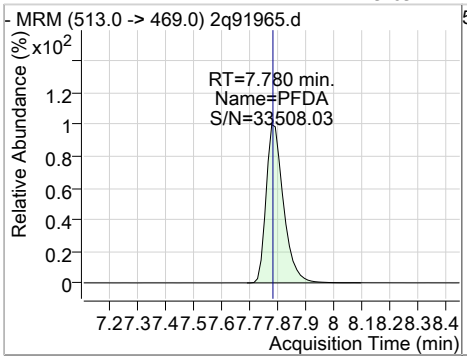
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.60	7.78	0.00	356946				

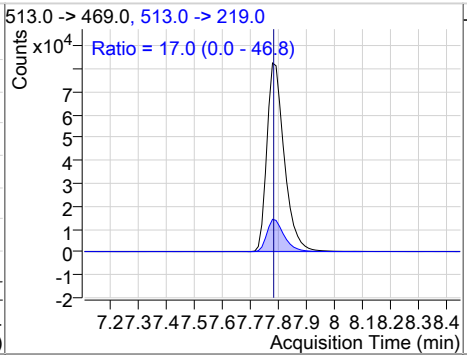


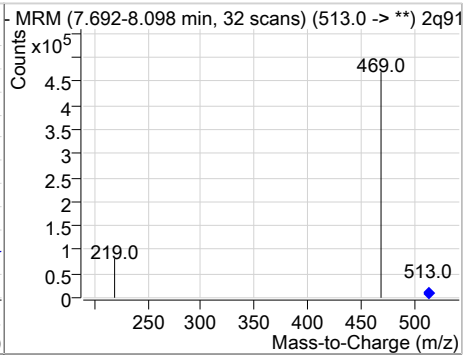




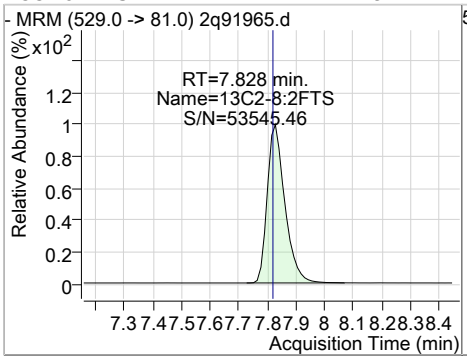
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.69	7.78	0.00	356143	513.0 -> 219.0	17.0	0.0	46.8

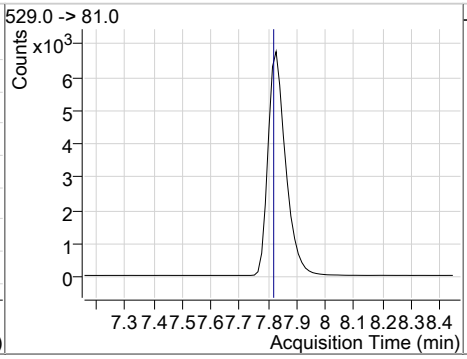


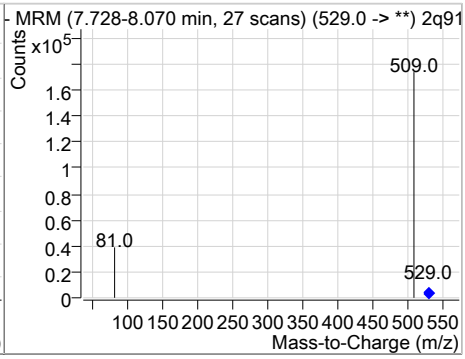




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.44	7.83	0.01	28787				

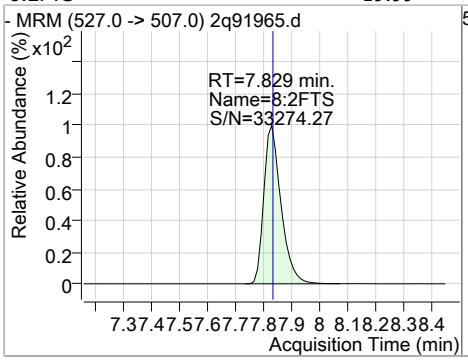


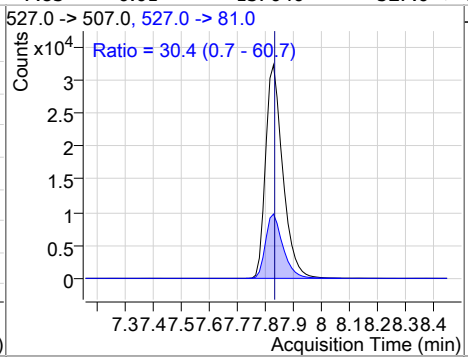


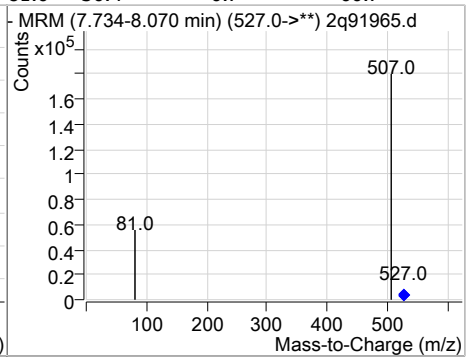


Perfluorinated Compounds by LC/MS/MS

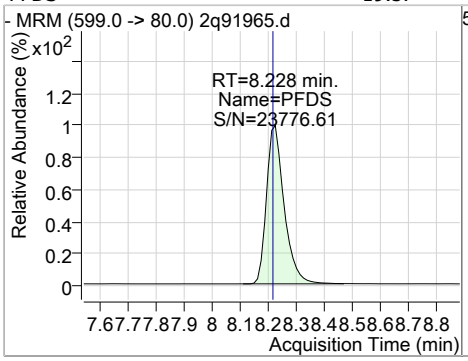
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.99	7.83	0.01	137040	527.0 -> 81.0	30.4	0.7	60.7

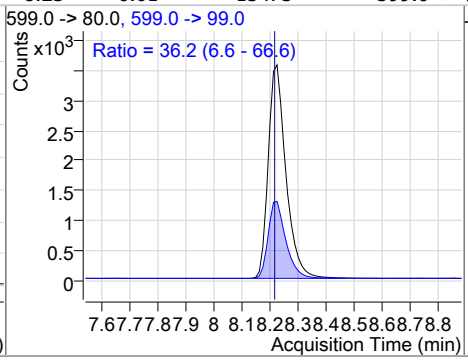


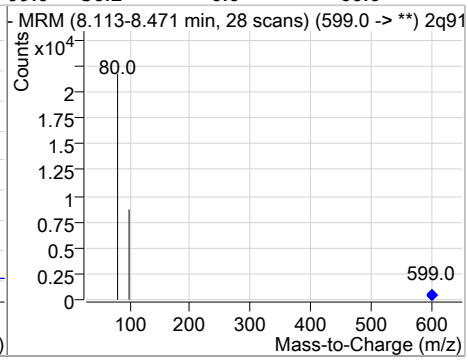




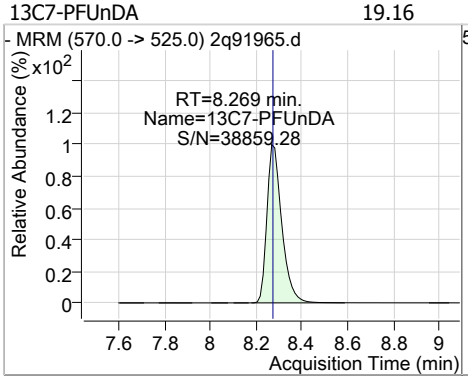
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.57	8.23	0.01	15475	599.0 -> 99.0	36.2	6.6	66.6

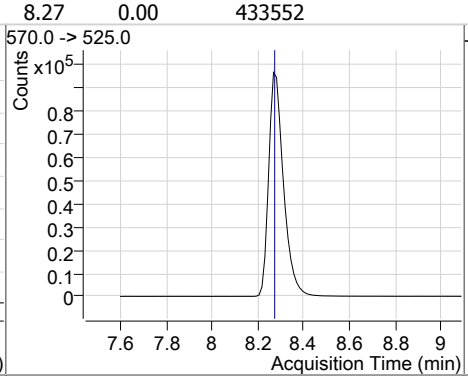


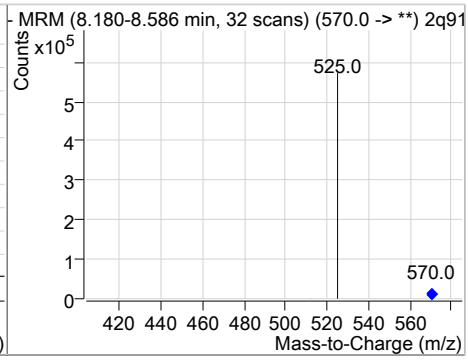




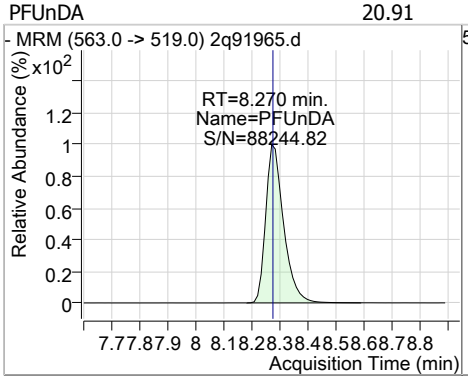
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.16	8.27	0.00	433552				

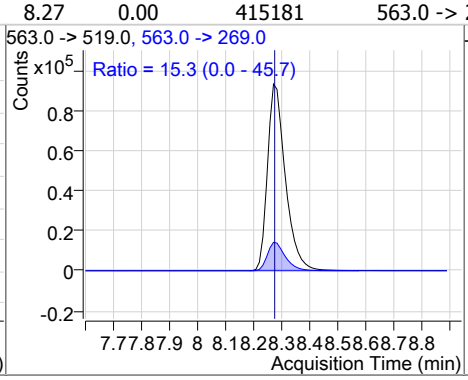


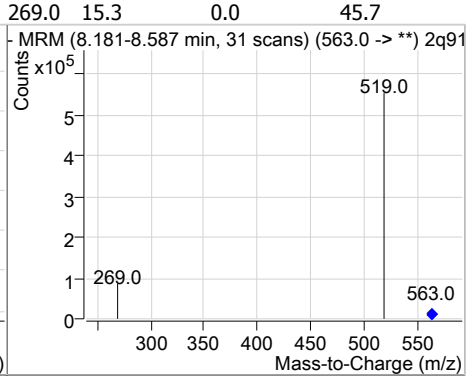




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.91	8.27	0.00	415181	563.0 -> 269.0	15.3	0.0	45.7

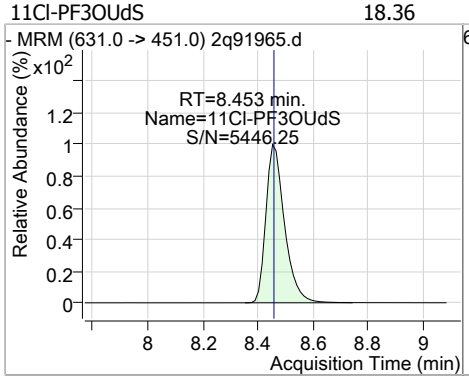


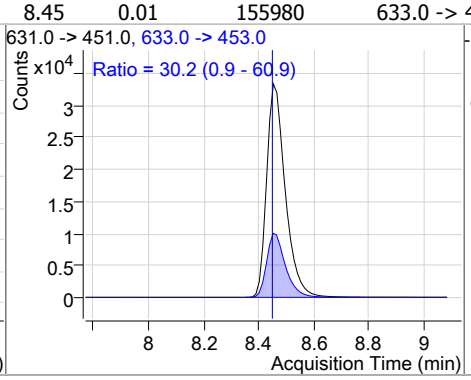


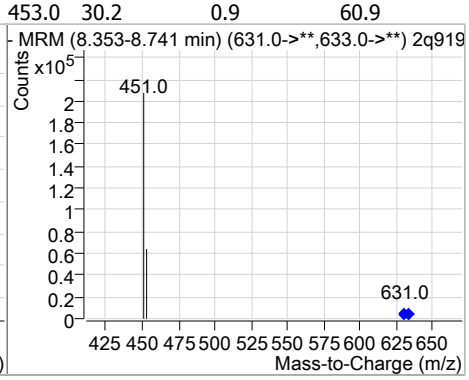


Perfluorinated Compounds by LC/MS/MS

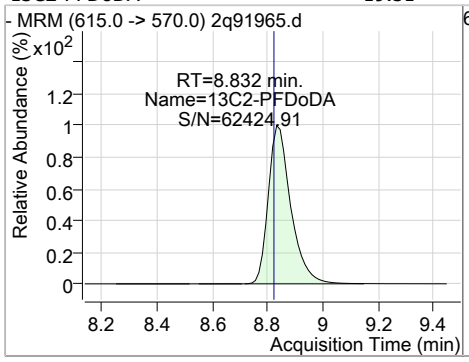
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.36	8.45	0.01	155980	633.0 -> 453.0	30.2	0.9	60.9

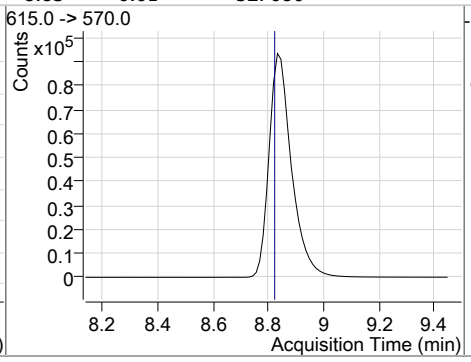


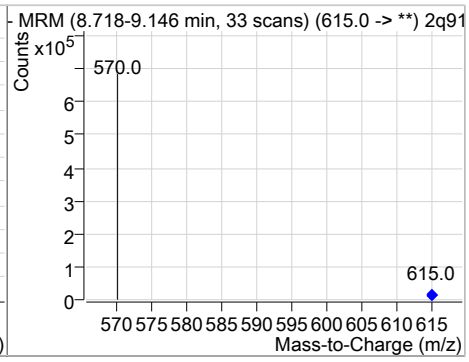




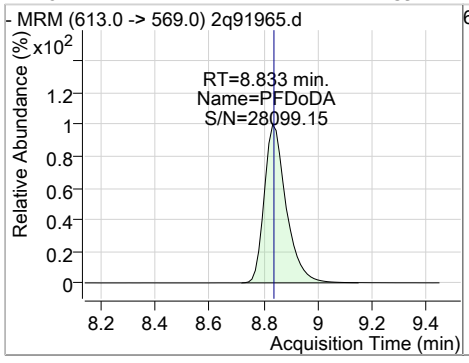
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.51	8.83	0.01	527080				

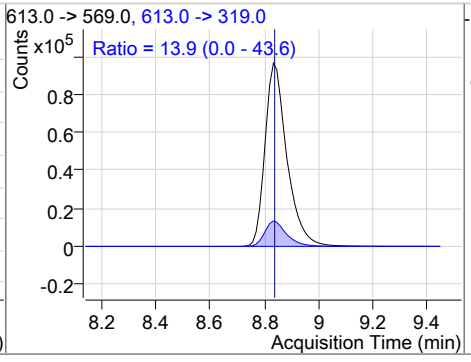


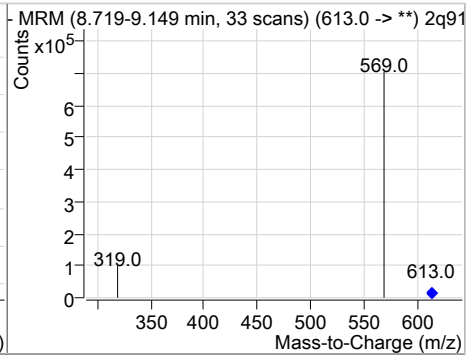




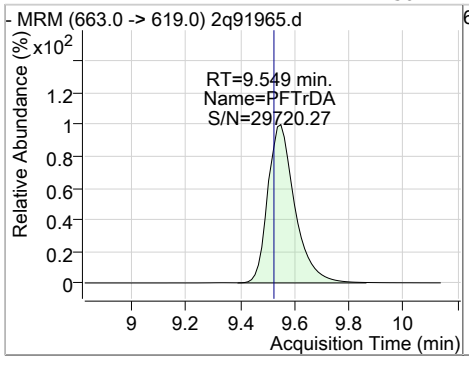
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	21.39	8.83	0.01	540897	613.0 -> 319.0	13.9	0.0	43.6

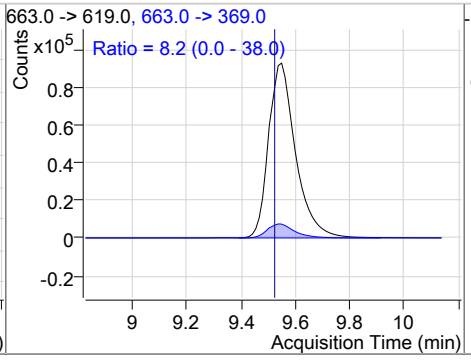


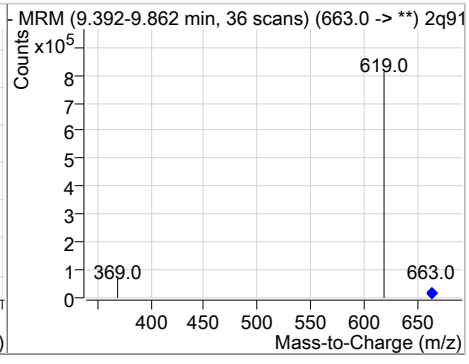




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	21.56	9.55	0.05	638360	663.0 -> 369.0	8.2	0.0	38.0

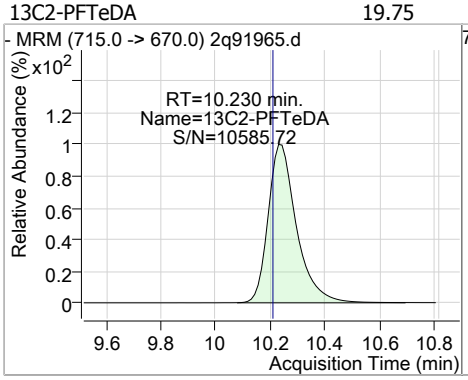


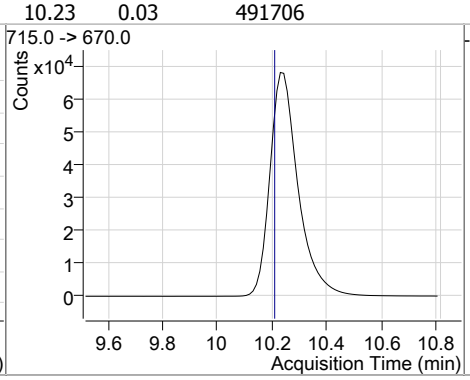


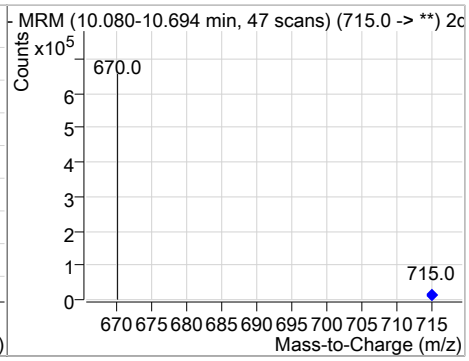


Perfluorinated Compounds by LC/MS/MS

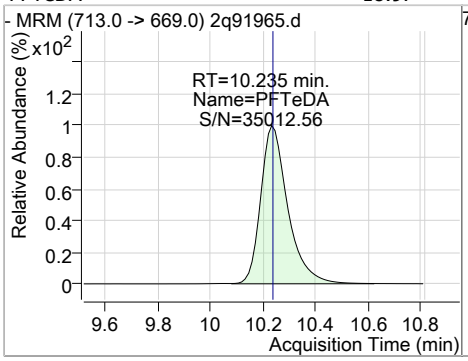
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.75	10.23	0.03	491706				

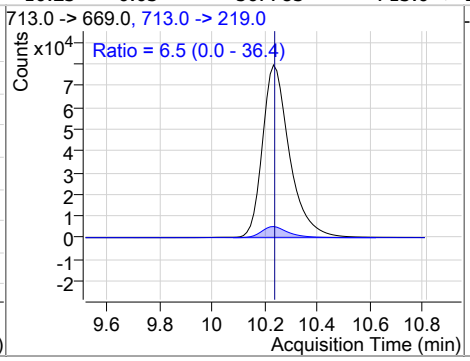


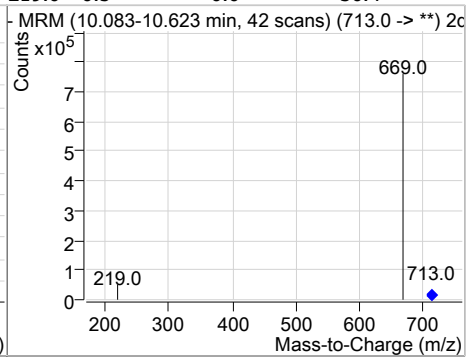




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	18.97	10.23	0.03	567783	713.0 -> 219.0	6.5	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1287-ICV1287
Lab FileID: 2Q91965.D
Injection Time: 05/27/22 14:53
Method: EPA 537M QSM5.3 B-15
Analyst approved: 05/28/22 11:26 James Boone
Supervisor approved: 05/29/22 17:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.64	Split peak
EtFOSAA	2991-50-6		7.77	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92306.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 3:12:45 PM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

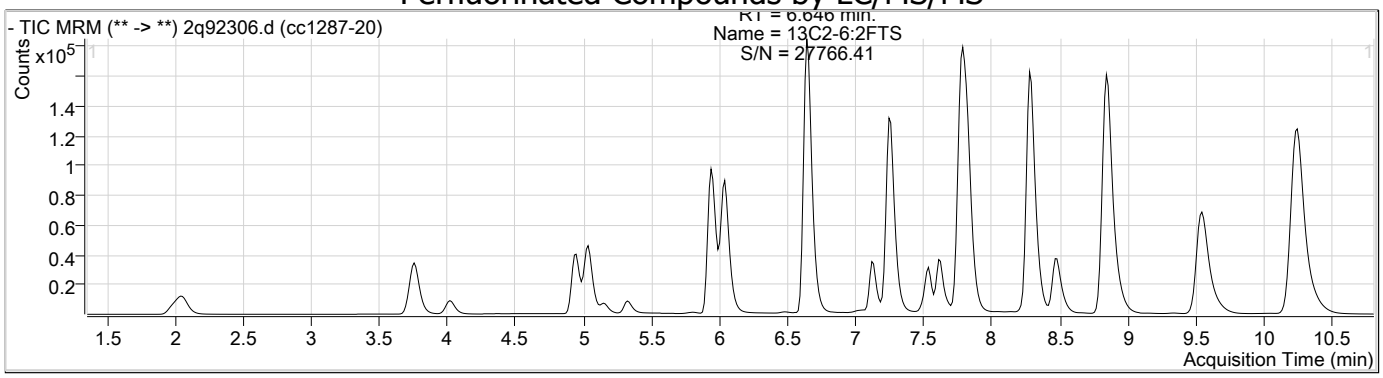
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	53215	20.00	µg/L	-0.013
M4-PFBA	2.039	217.0 -> 172.0	65237	20.00	µg/L	0.025
M5-PFPeA	3.761	268.0 -> 223.0	76437	20.00	µg/L	0.025
M5-PFHxA	5.039	318.0 -> 273.0	113980	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	159913	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	222297	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	249067	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	318887	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	394835	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	475468	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	433234	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	64075	20.00	µg/L	-0.025
M3-PFBS	4.017	302.0 -> 99.0	8941	20.00	µg/L	0.013
M3-PFHxS	5.979	402.0 -> 99.0	13107	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	18189	20.00	µg/L	0.013
M2-4:2FTS	4.946	329.0 -> 81.0	8202	20.00	µg/L	0.013
M2-6:2FTS	6.646	429.0 -> 81.0	17584	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	25221	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	64358	20.00	µg/L	-0.013
M3-HFPO-DA	5.332	287.0 -> 169.0	4445	20.00	µg/L	0.013
M3-MeFOSA	7.539	515.0 -> 169.0	21647	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.946	329.0 -> 81.0	8202	17.63	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.2%		
13C2-6:2FTS	6.646	429.0 -> 81.0	17584	17.00	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.0%		
13C2-8:2FTS	7.828	529.0 -> 81.0	25221	17.03	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.2%		
13C2-PFDoDA	8.845	615.0 -> 570.0	475468	17.60	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.0%		
13C2-PFTeDA	10.243	715.0 -> 670.0	433234	17.40	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%		
13C3-PFBS	4.017	302.0 -> 99.0	8941	17.58	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C3-PFHxS	5.979	402.0 -> 99.0	13107	18.39	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%		
13C4-PFBA	2.039	217.0 -> 172.0	65237	16.88	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C4-PFHpA	5.941	367.0 -> 322.0	159913	17.22	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.1%		
d5-EtFOSAA	7.748	589.0 -> 419.0	53215	17.53	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%		
13C5-PFHxA	5.039	318.0 -> 273.0	113980	16.88	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C5-PFPeA	3.761	268.0 -> 223.0	76437	16.77	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

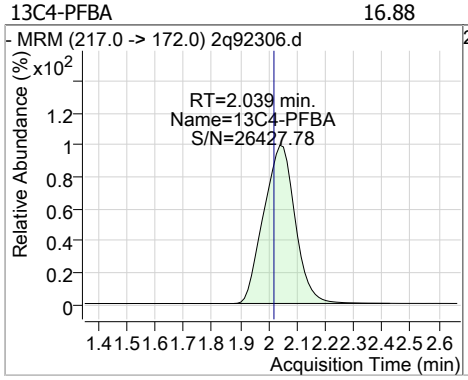
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%			
13C6-PFDA	7.792	519.0 -> 474.0	318887	17.51	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%			
13C7-PFUnDA	8.282	570.0 -> 525.0	394835	17.45	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.2%			
13C8-FOSA	7.124	506.0 -> 78.0	64075	17.41	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%			
13C8-PFOA	6.649	421.0 -> 376.0	222297	17.27	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%			
13C8-PFOS	7.237	507.0 -> 99.0	18189	17.53	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.6%			
13C9-PFNA	7.252	472.0 -> 427.0	249067	17.08	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.4%			
d3-MeFOSAA	7.610	573.0 -> 419.0	64358	16.78	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.9%			
13C3-HFPO-DA	5.332	287.0 -> 169.0	4445	17.07	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.3%			
d3-MeFOSA	7.539	515.0 -> 169.0	21647	15.47	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.3%			
Target Compounds							**QValue**
4:2FTS	4.950	327.0 -> 307.0	71944	16.74	µg/L		98
6:2FTS	6.647	427.0 -> 407.0	112499	17.35	µg/L		99
8:2FTS	7.829	527.0 -> 507.0	105531	17.57	µg/L		99
EtFOSAA	7.761	584.0 -> 419.0	44940	16.95	µg/L	m	97
FOSA	7.125	498.0 -> 78.0	58164	17.29	µg/L		99
MeFOSAA	7.623	570.0 -> 419.0	52291	17.69	µg/L	m	99
PFBA	2.046	213.0 -> 169.0	28832	17.24	µg/L		100
PFBS	4.019	299.0 -> 80.0	25843	17.34	µg/L		100
PFDA	7.793	513.0 -> 469.0	277768	17.19	µg/L		100
PFDoDA	8.846	613.0 -> 569.0	392091	17.19	µg/L		100
PFDS	8.228	599.0 -> 80.0	12837	17.82	µg/L		99
PFHpA	5.943	363.0 -> 319.0	227417	17.39	µg/L		100
PFHpS	6.657	449.0 -> 80.0	26252	17.04	µg/L		99
PFHxA	5.041	313.0 -> 269.0	72601	17.22	µg/L		99
PFHxS	5.980	399.0 -> 80.0	27926	16.98	µg/L	m	96
PFNA	7.265	463.0 -> 419.0	244753	17.67	µg/L		100
PFNS	7.751	549.0 -> 80.0	21862	17.07	µg/L		97
PFOA	6.649	413.0 -> 369.0	208054	17.23	µg/L		99
PFOS	7.238	499.0 -> 80.0	27701	17.40	µg/L	m	98
PFPeA	3.764	263.0 -> 219.0	105619	17.94	µg/L		100
PFPeS	5.145	349.0 -> 80.0	18349	18.00	µg/L		98
PFTeDA	10.235	713.0 -> 669.0	469218	17.79	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	457606	17.13	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	307590	17.01	µg/L		99
11Cl-PF3OUdS	8.466	631.0 -> 451.0	134708	17.58	µg/L		100
9Cl-PF3ONS	7.511	531.0 -> 351.0	28447	16.46	µg/L		98
ADONA	6.044	377.0 -> 251.0	278596	16.67	µg/L		99
HFPO-DA	5.326	329.0 -> 169.0	28515	17.79	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	16849	18.45	µg/L		100

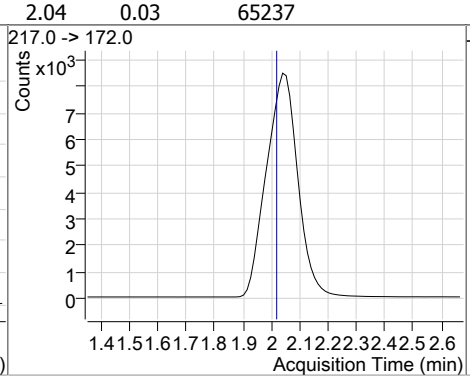
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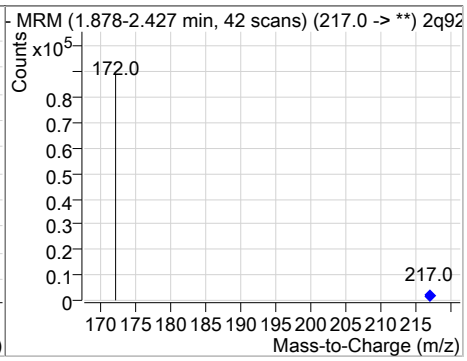
Perfluorinated Compounds by LC/MS/MS



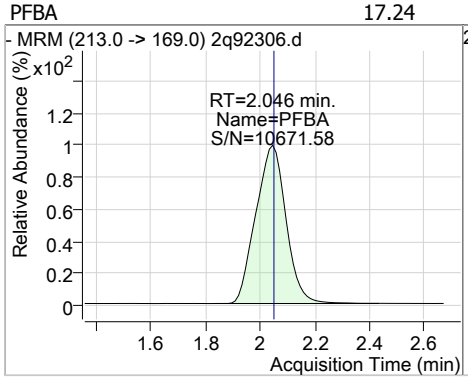
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.88	2.04	0.03	65237				

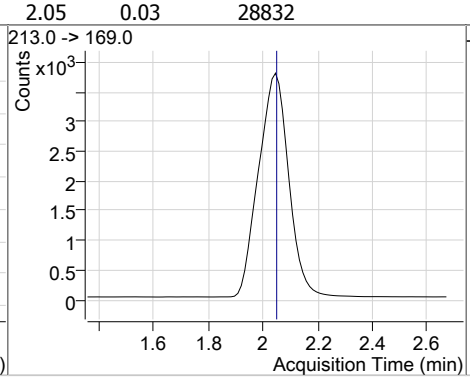


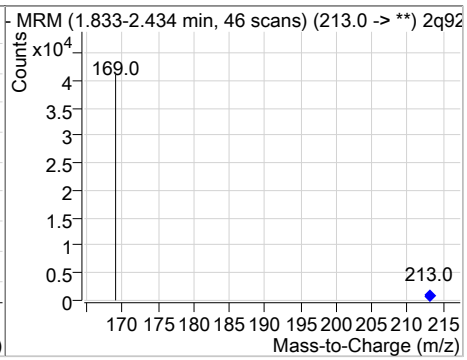




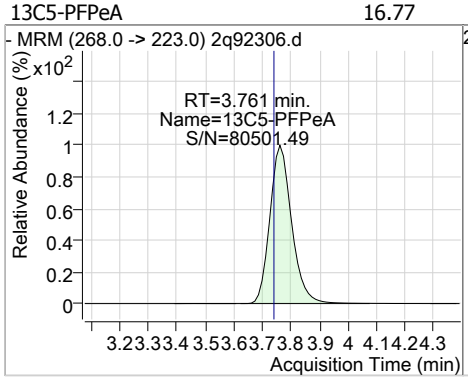
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PFBA	17.24	2.05	0.03	28832				

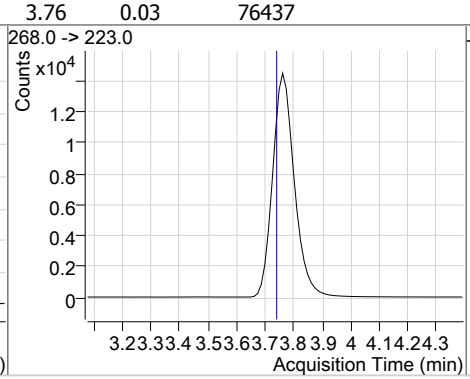


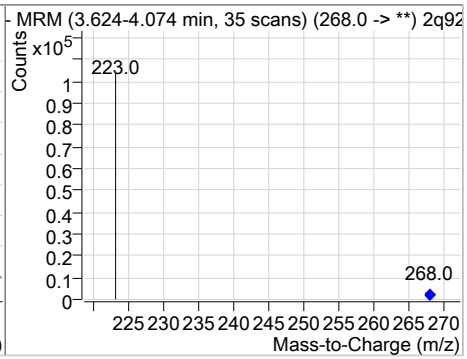




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.77	3.76	0.03	76437				

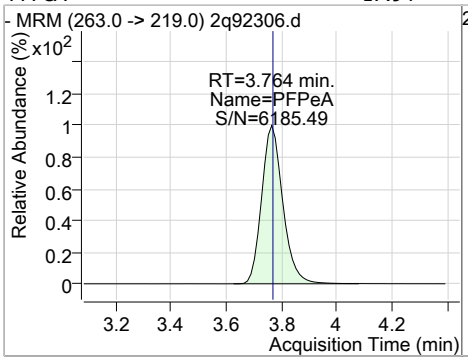


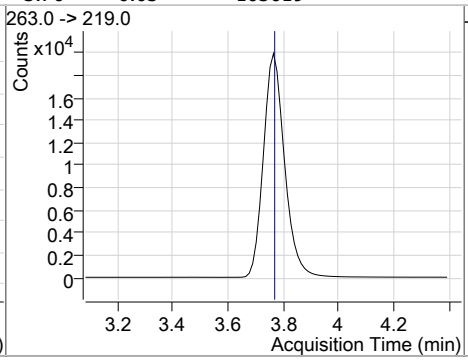


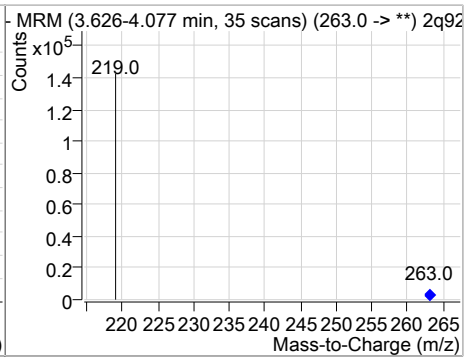


Perfluorinated Compounds by LC/MS/MS

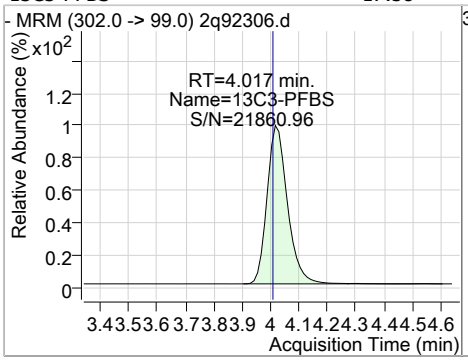
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.94	3.76	0.03	105619				

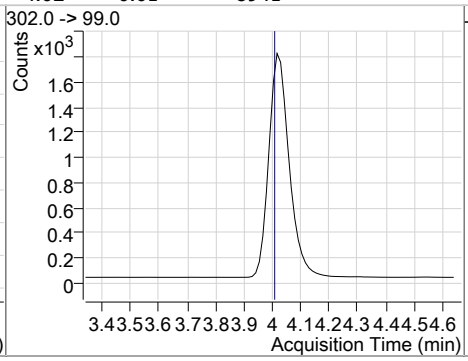


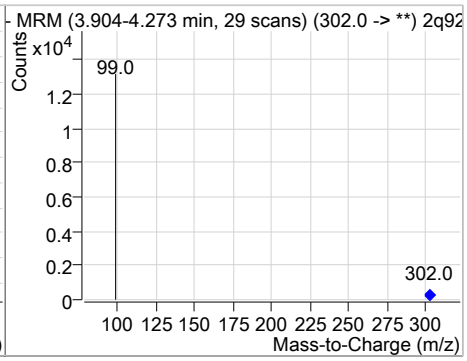




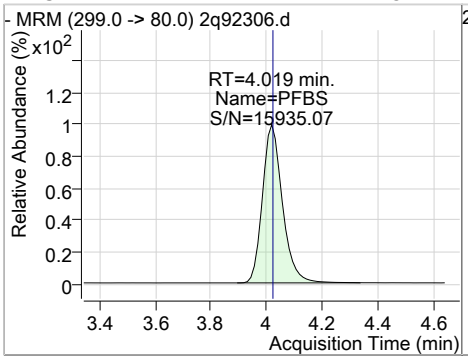
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.58	4.02	0.01	8941				

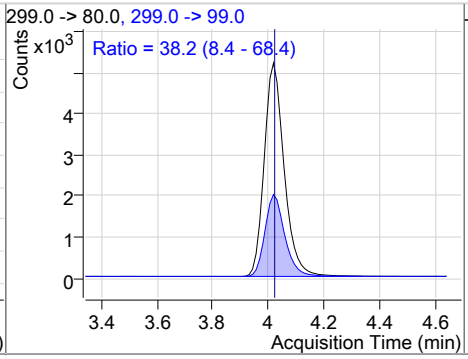


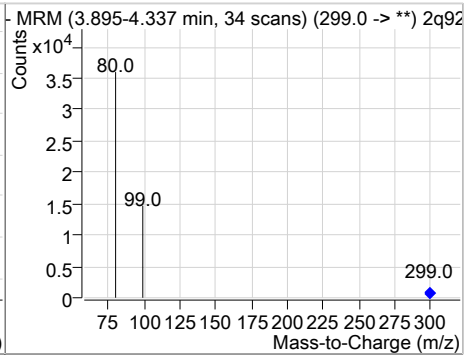




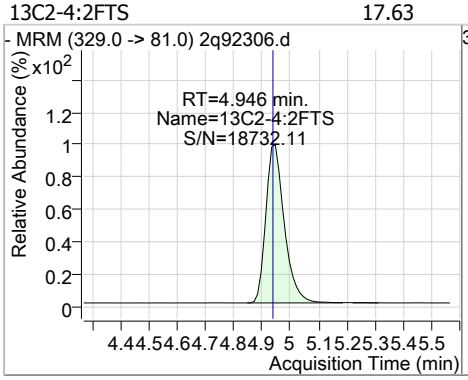
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.34	4.02	0.01	25843	299.0 -> 99.0	38.2	8.4	68.4

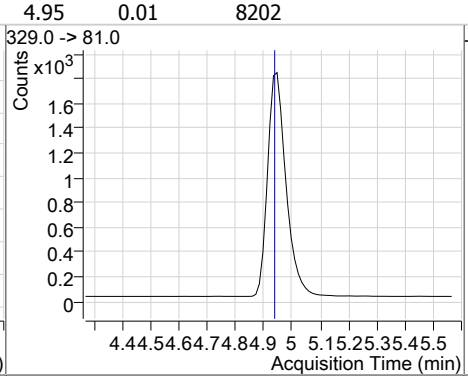


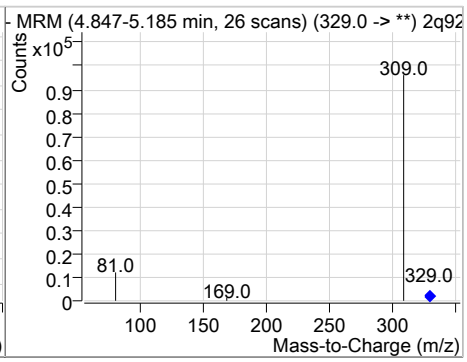




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.63	4.95	0.01	8202				

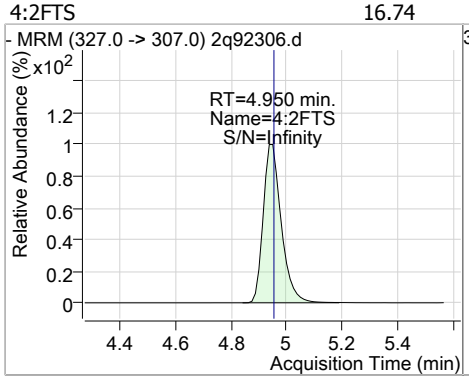


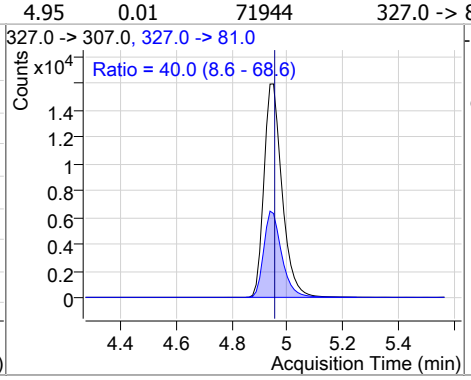


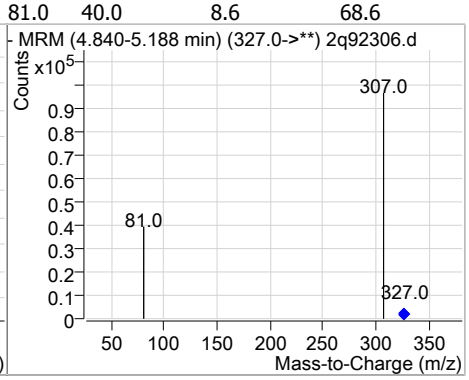


Perfluorinated Compounds by LC/MS/MS

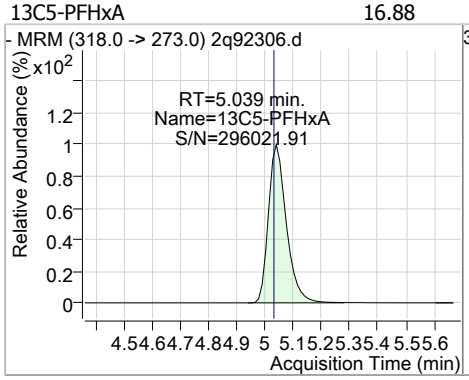
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.74	4.95	0.01	71944	327.0 -> 81.0	40.0	8.6	68.6

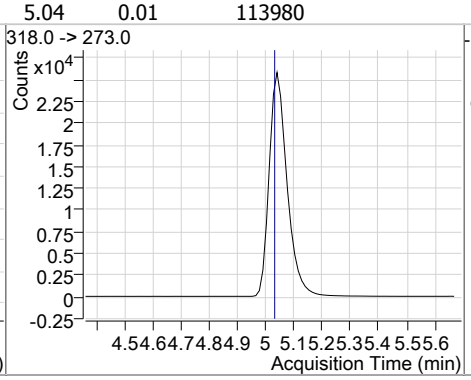


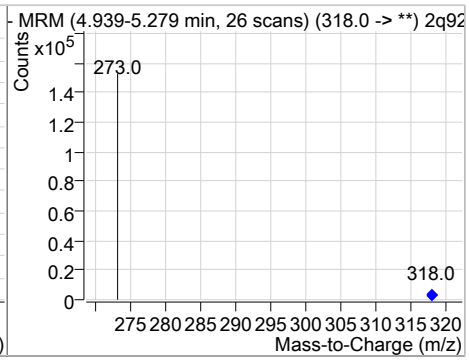




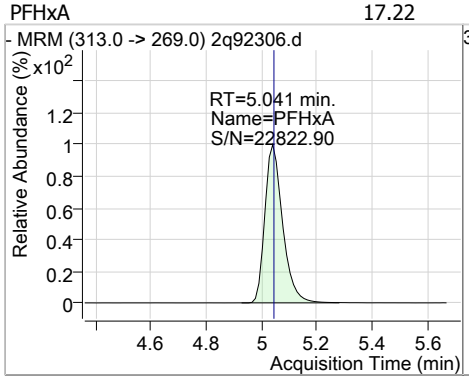
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.88	5.04	0.01	113980				

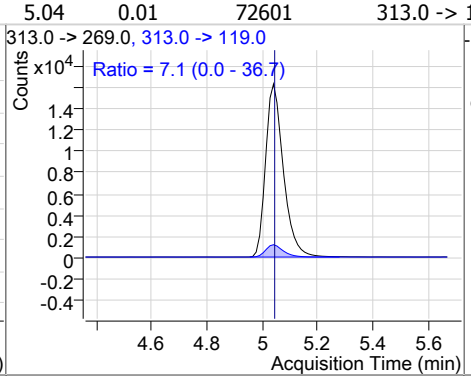


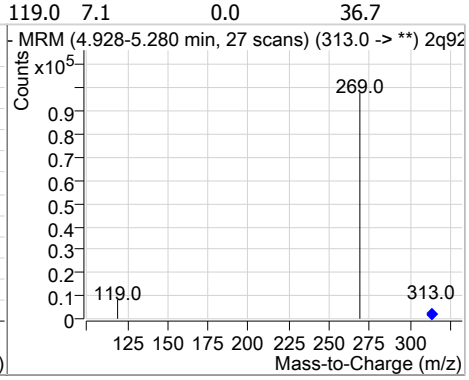




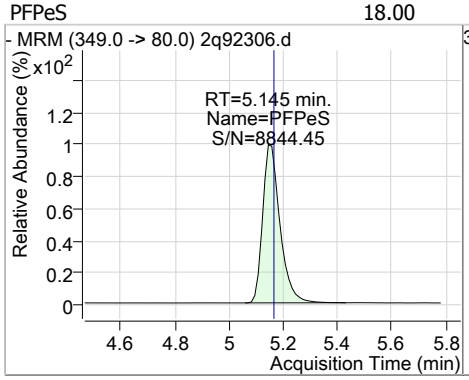
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.22	5.04	0.01	72601	313.0 -> 119.0	7.1	0.0	36.7

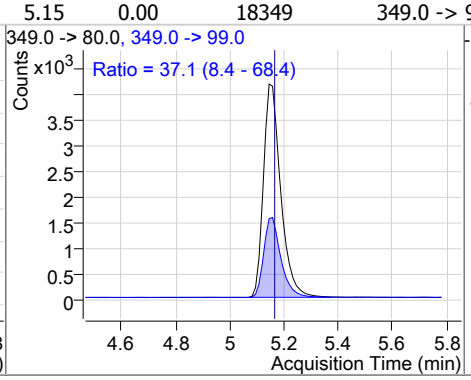


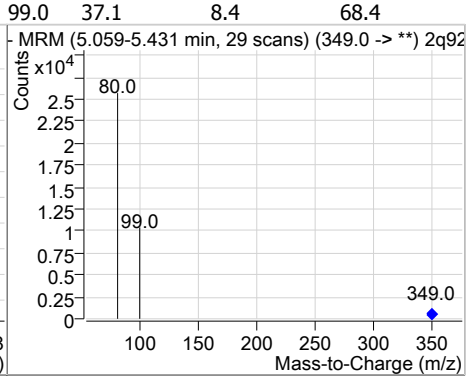




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	18.00	5.15	0.00	18349	349.0 -> 99.0	37.1	8.4	68.4

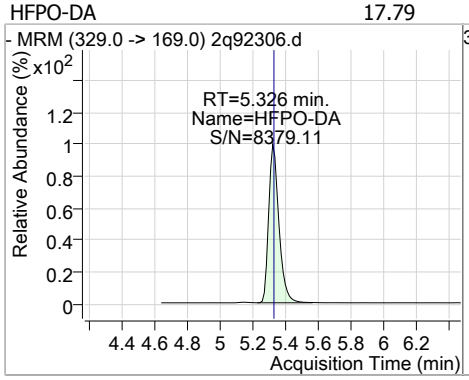


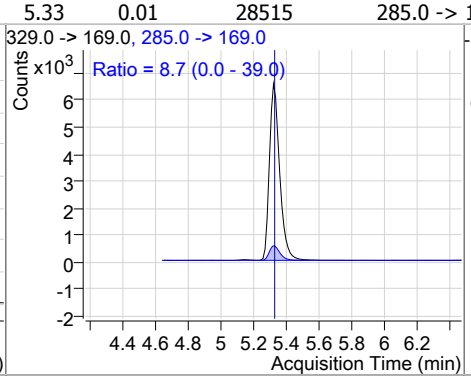


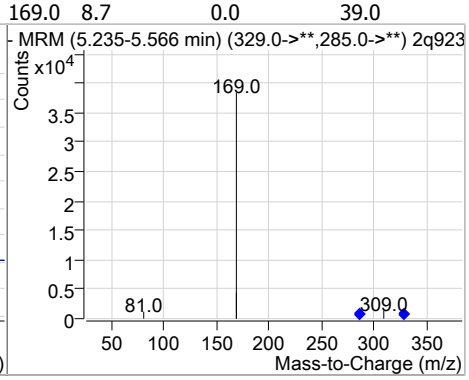


Perfluorinated Compounds by LC/MS/MS

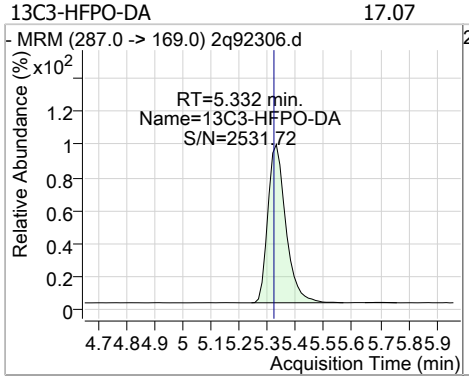
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	17.79	5.33	0.01	28515	285.0 -> 169.0	8.7	0.0	39.0

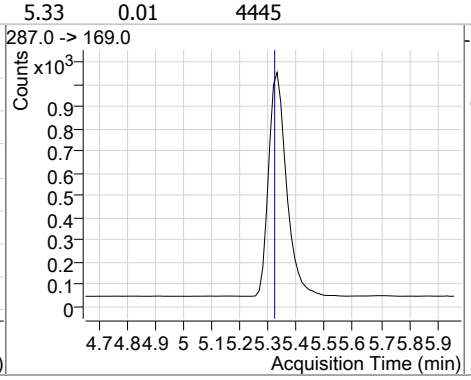


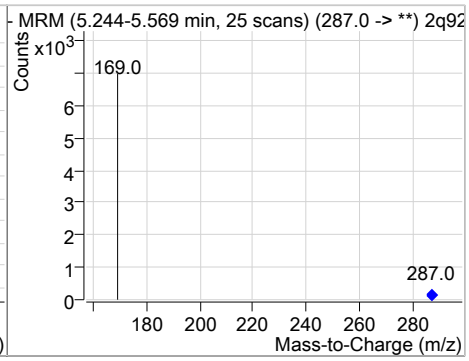




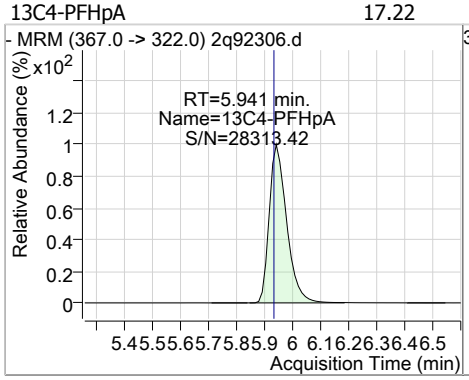
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	17.07	5.33	0.01	4445				

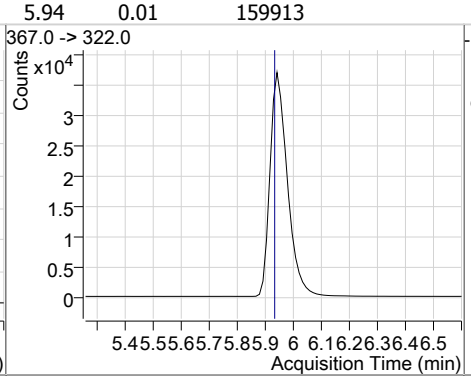


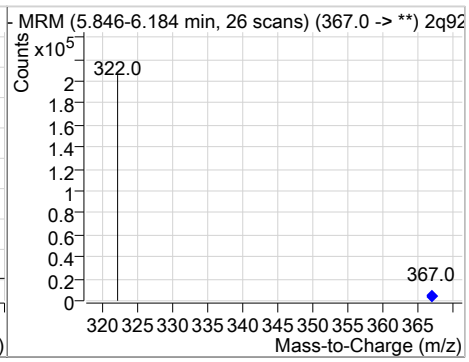




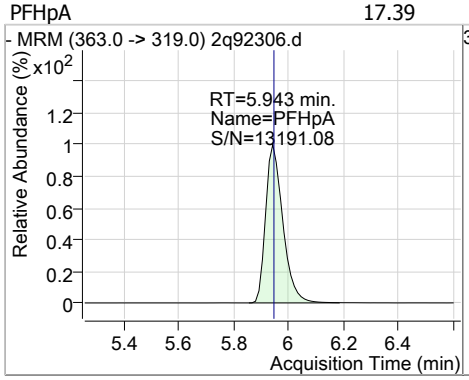
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.22	5.94	0.01	159913				

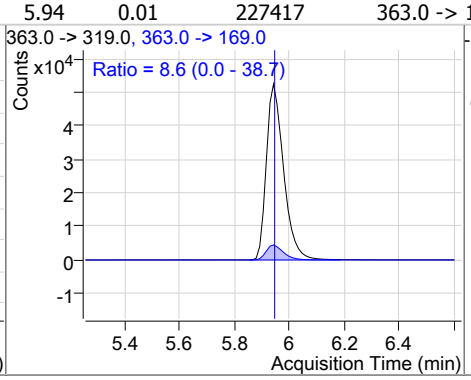


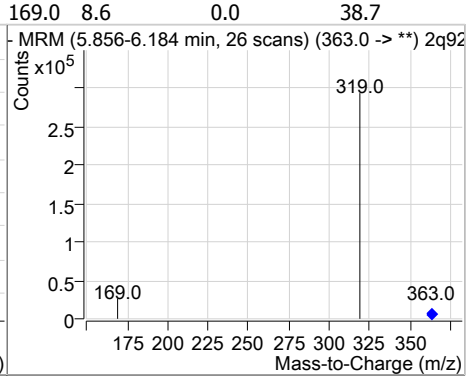




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.39	5.94	0.01	227417	363.0 -> 169.0	8.6	0.0	38.7

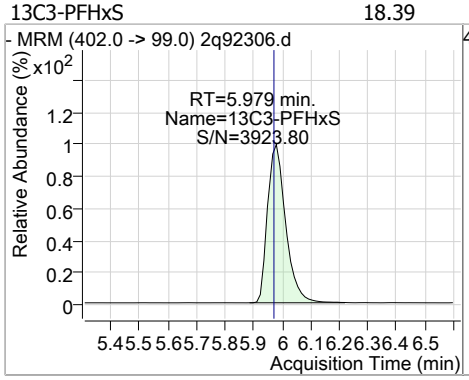


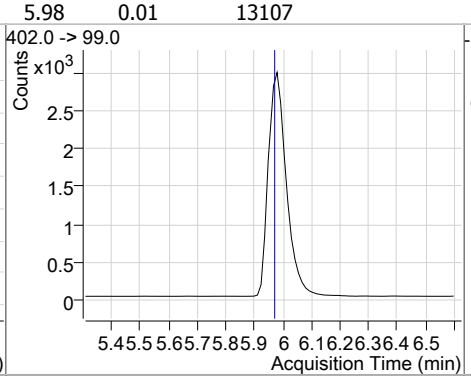


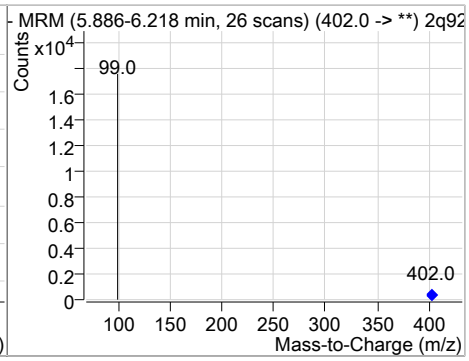


Perfluorinated Compounds by LC/MS/MS

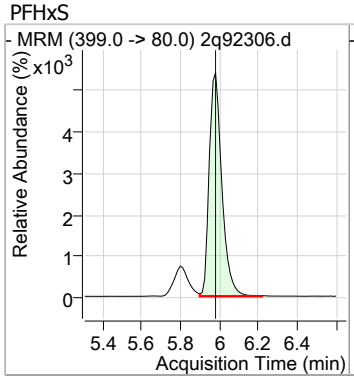
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.39	5.98	0.01	13107				

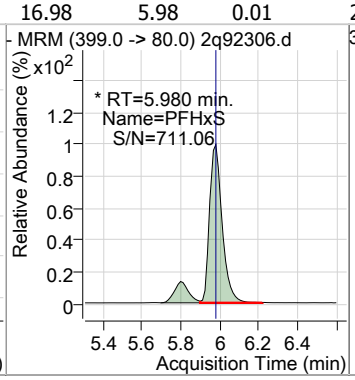


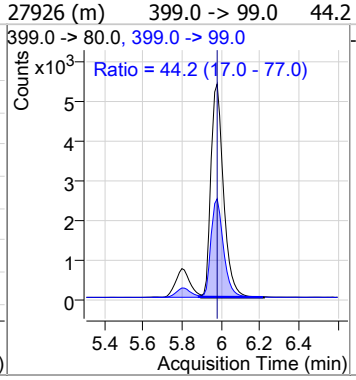


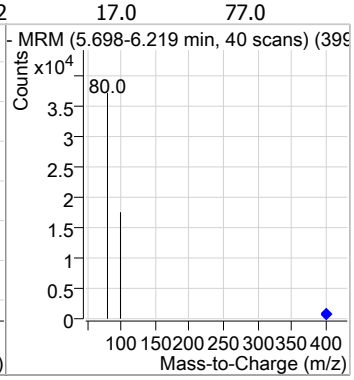


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	16.98	5.98	0.01	27926 (m)	399.0 -> 99.0	44.2	17.0	77.0

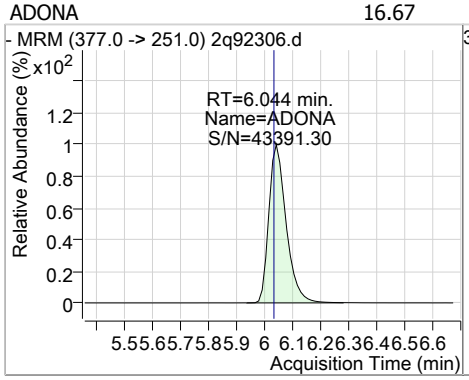


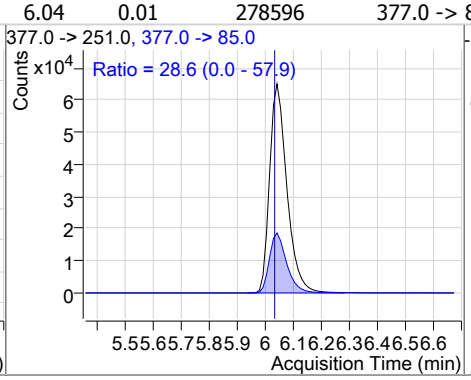


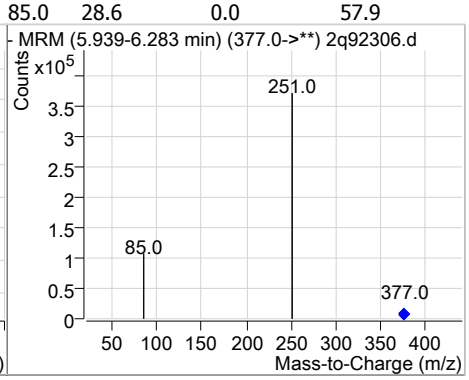




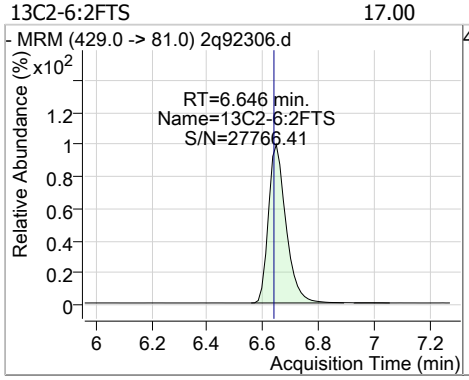
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	16.67	6.04	0.01	278596	377.0 -> 85.0	28.6	0.0	57.9

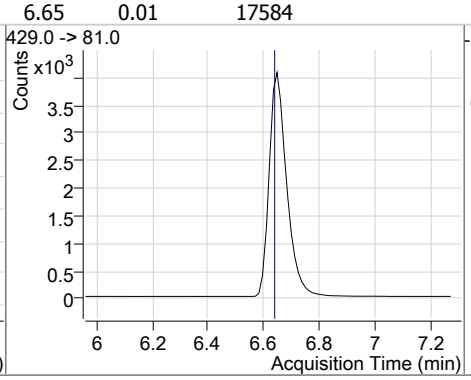


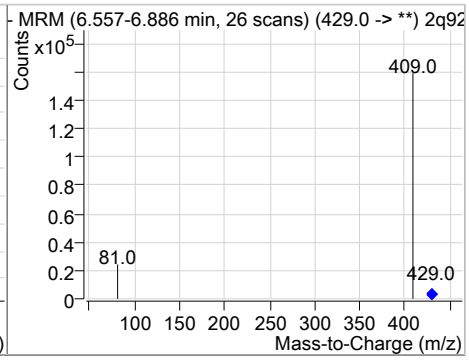




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.00	6.65	0.01	17584				

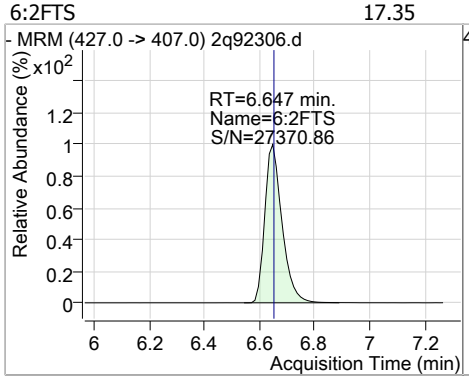


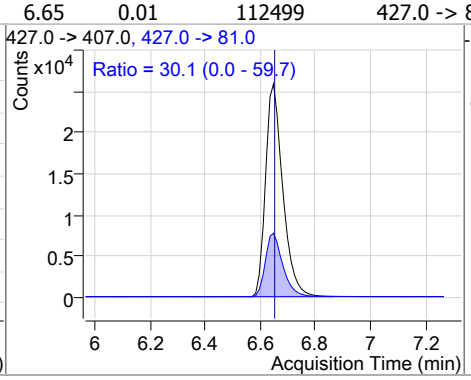


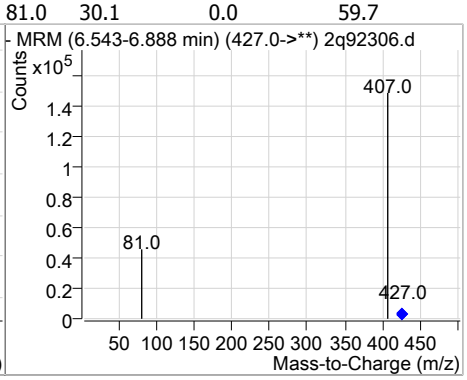


Perfluorinated Compounds by LC/MS/MS

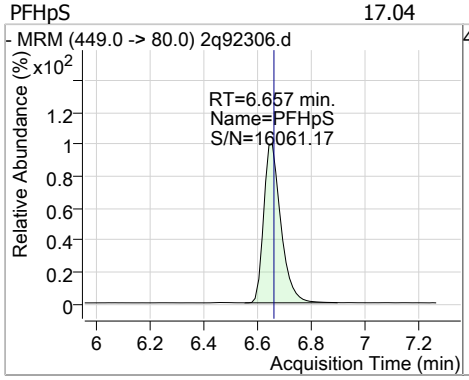
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.35	6.65	0.01	112499	427.0 -> 81.0	30.1	0.0	59.7

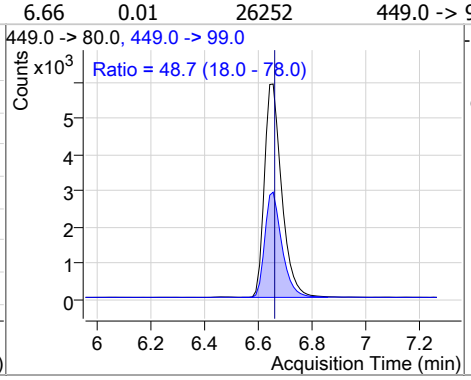


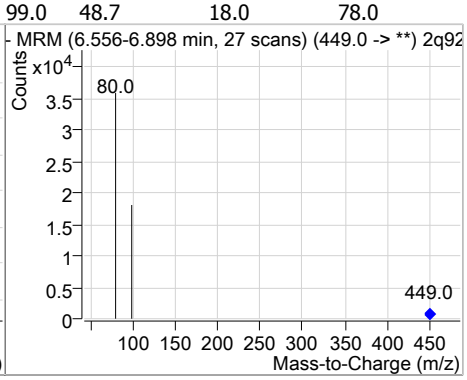




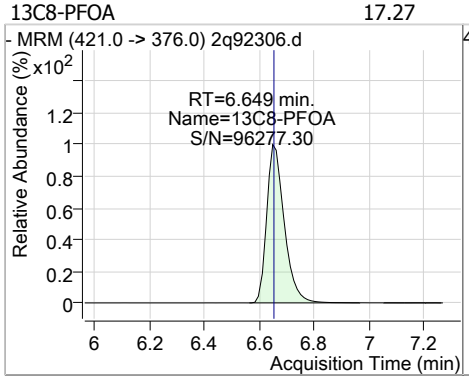
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.04	6.66	0.01	26252	449.0 -> 99.0	48.7	18.0	78.0

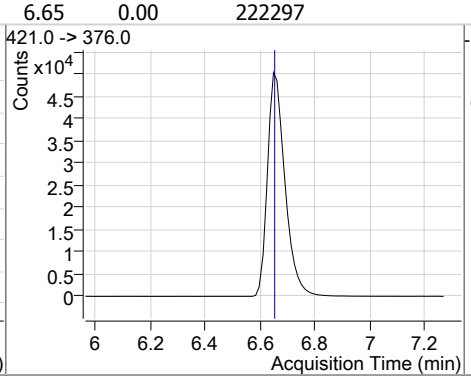


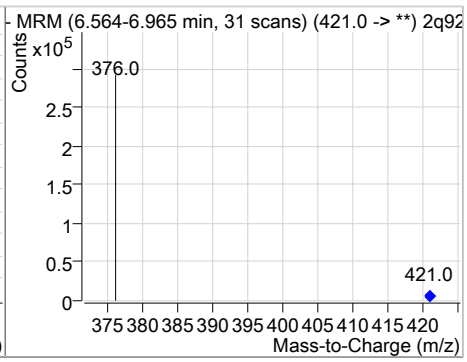




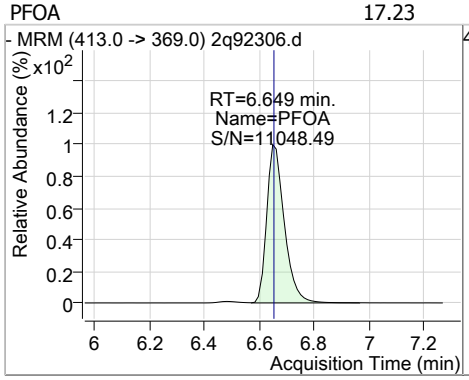
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.27	6.65	0.00	222297				

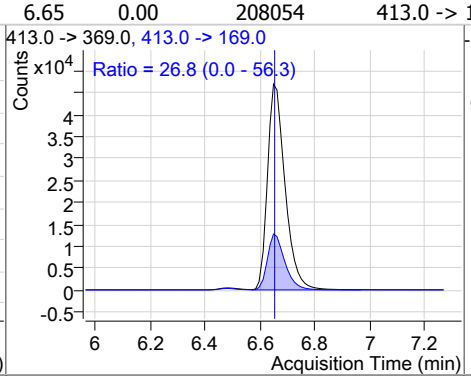


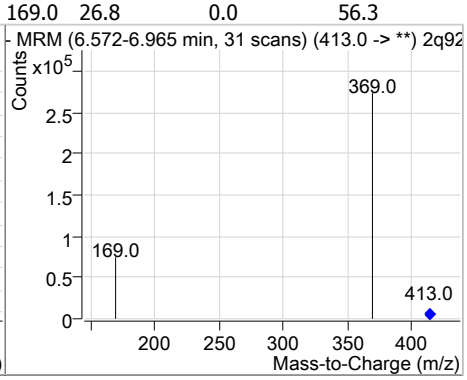




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.23	6.65	0.00	208054	413.0 -> 169.0	26.8	0.0	56.3

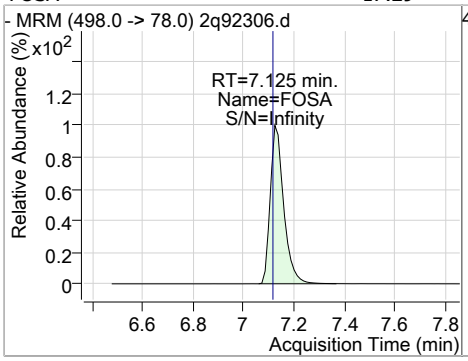


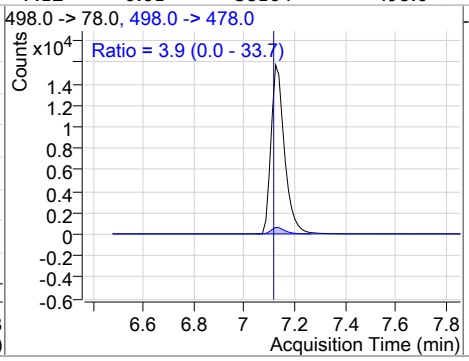


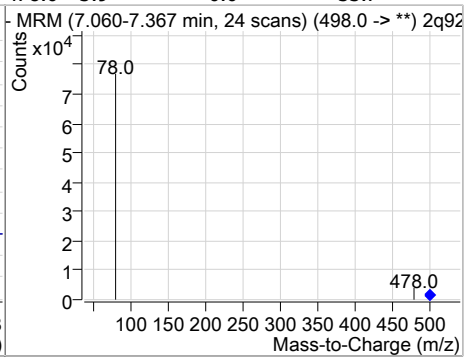


Perfluorinated Compounds by LC/MS/MS

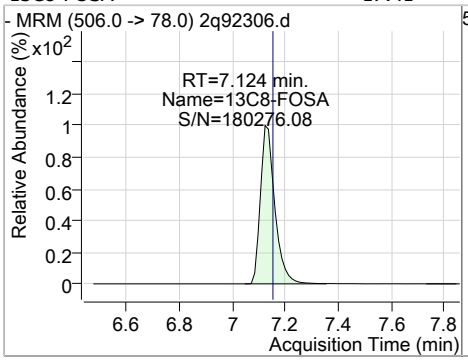
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.29	7.12	-0.01	58164	498.0 -> 478.0	3.9	0.0	33.7

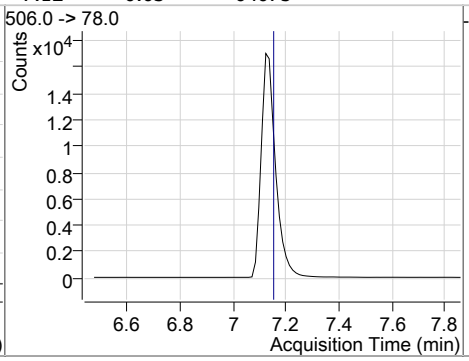


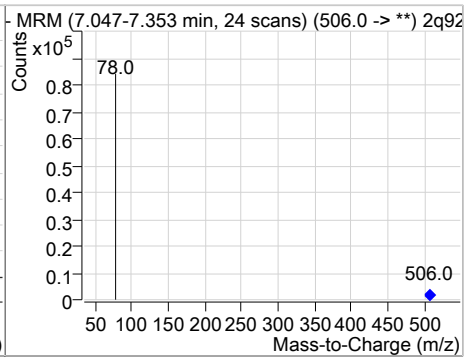




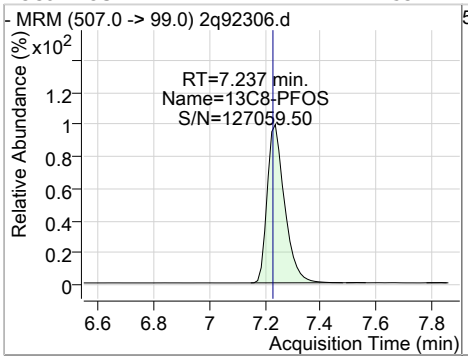
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.41	7.12	-0.03	64075				

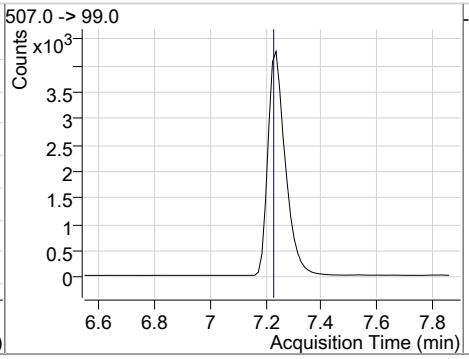


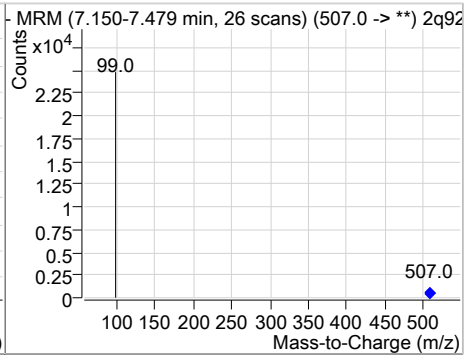




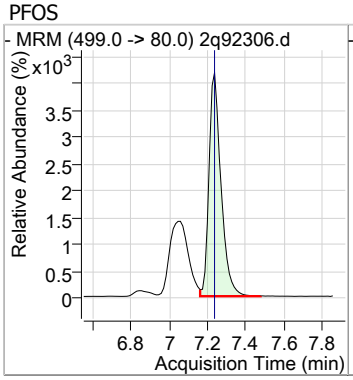
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.53	7.24	0.01	18189				

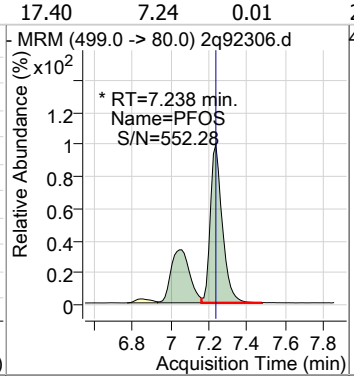


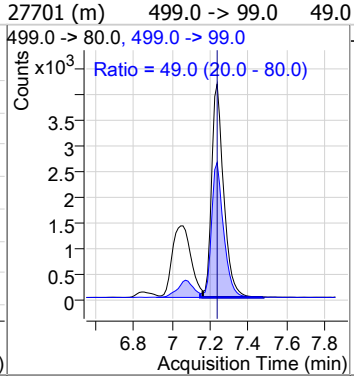


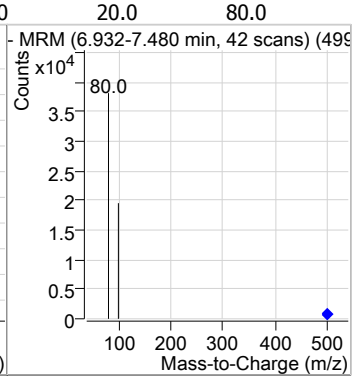


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.40	7.24	0.01	27701 (m)	499.0 -> 99.0	49.0	20.0	80.0



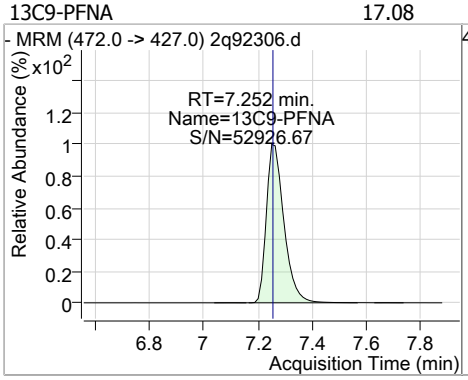


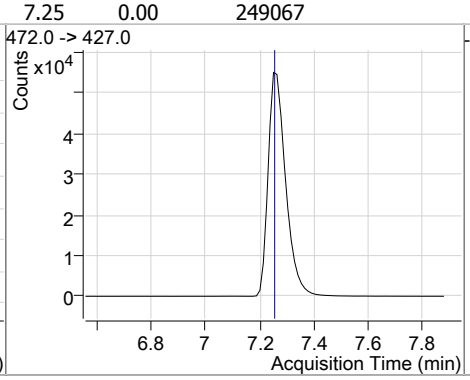


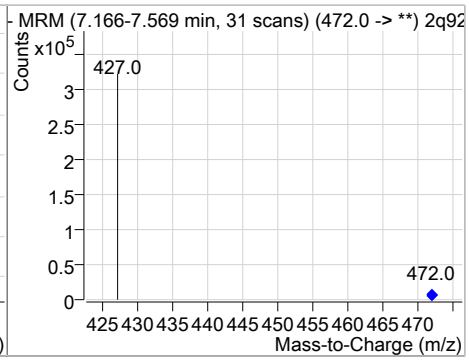


Perfluorinated Compounds by LC/MS/MS

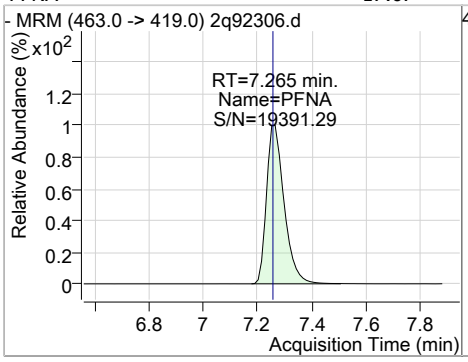
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.08	7.25	0.00	249067				

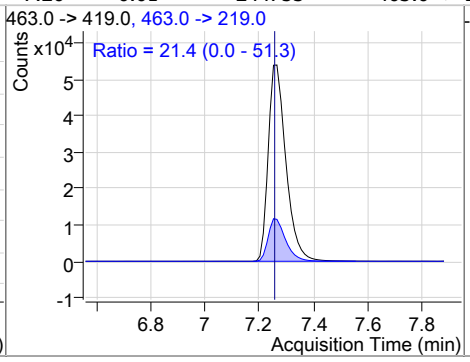


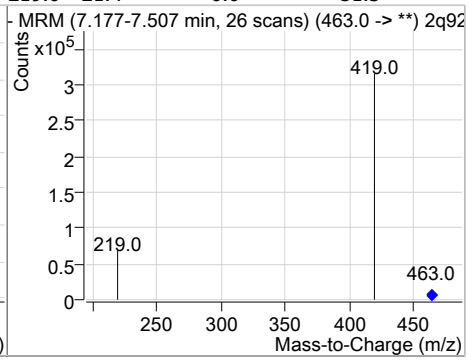




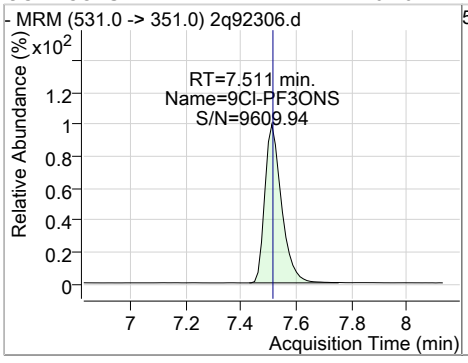
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.67	7.26	0.01	244753	463.0 -> 219.0	21.4	0.0	51.3

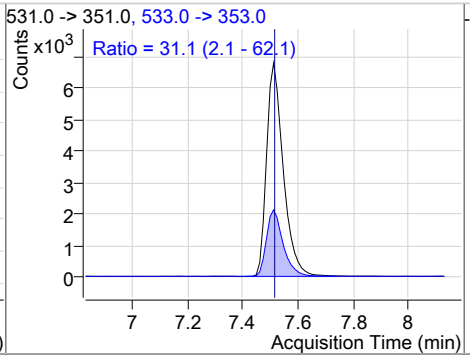


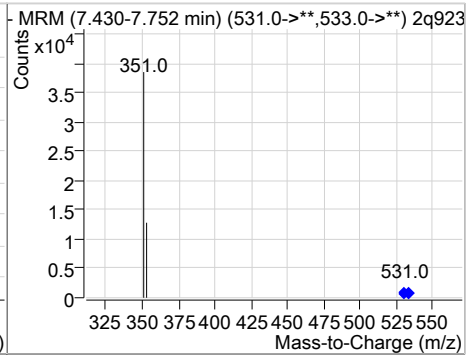




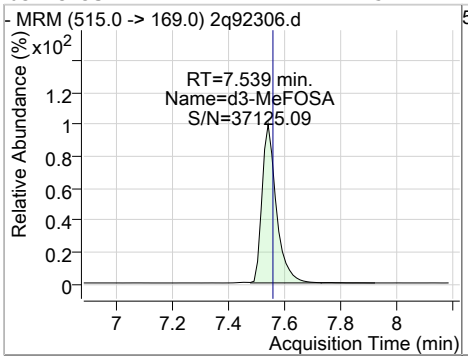
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.46	7.51	0.01	28447	533.0 -> 353.0	31.1	2.1	62.1

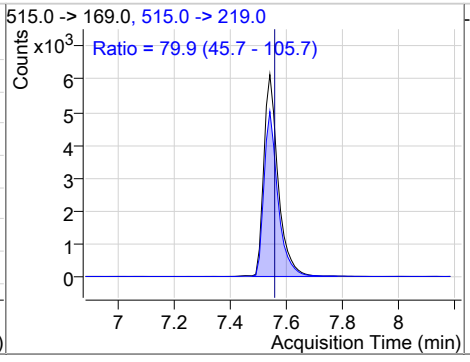


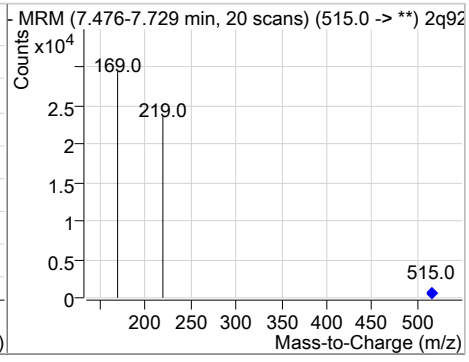




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	15.47	7.54	-0.01	21647	515.0 -> 219.0	79.9	45.7	105.7

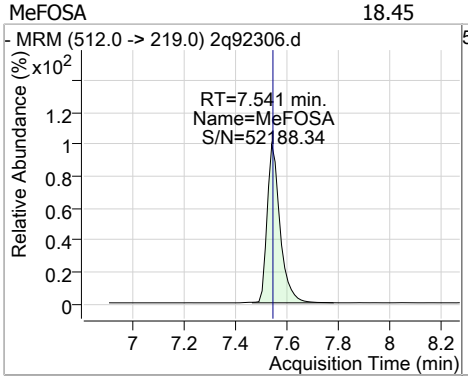


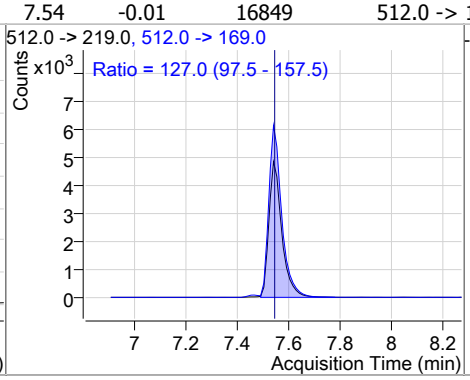


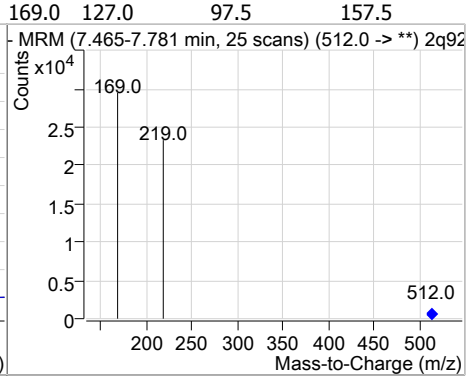


Perfluorinated Compounds by LC/MS/MS

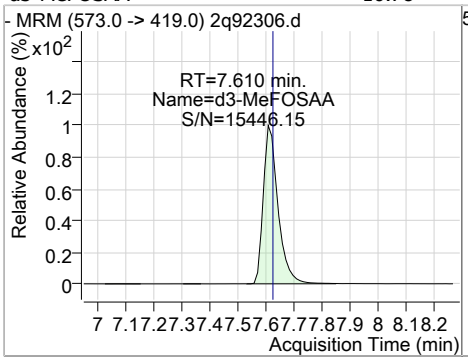
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.45	7.54	-0.01	16849	512.0 -> 169.0	127.0	97.5	157.5

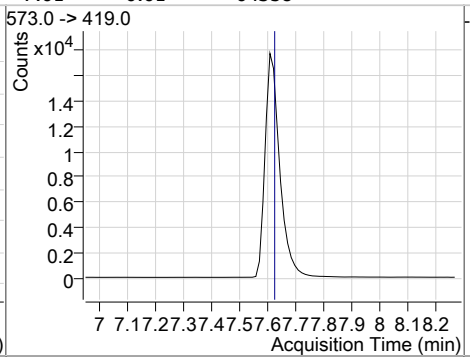


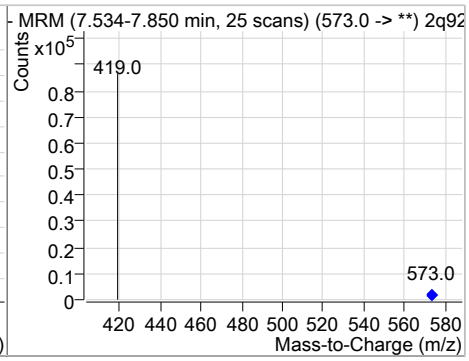




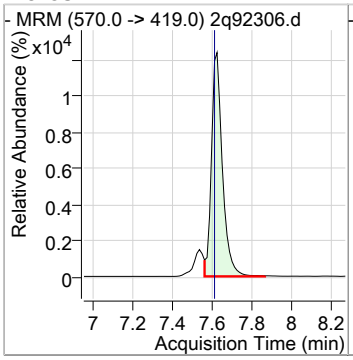
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	16.78	7.61	-0.01	64358				

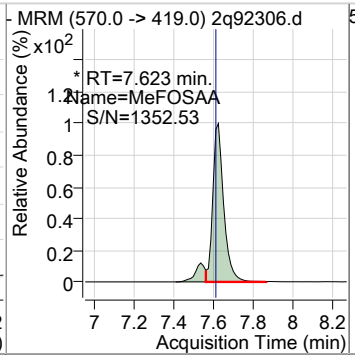


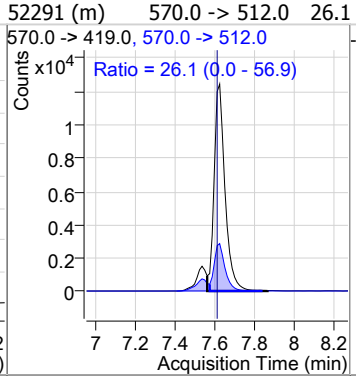


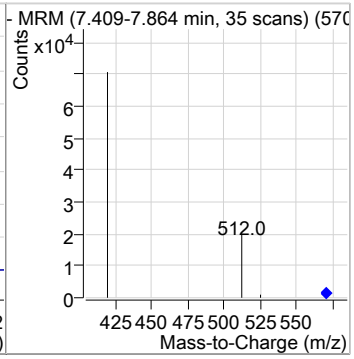


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.69	7.62	0.00	52291 (m)	570.0 -> 512.0	26.1	0.0	56.9

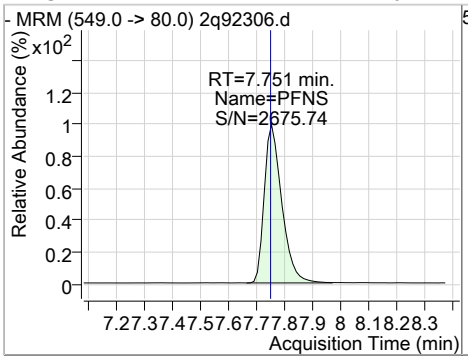


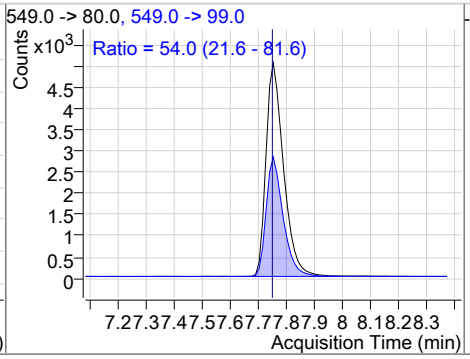


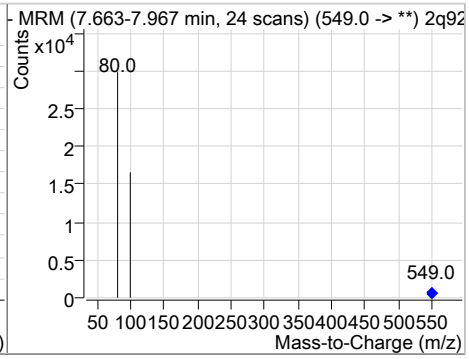




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.07	7.75	0.01	21862	549.0 -> 99.0	54.0	21.6	81.6

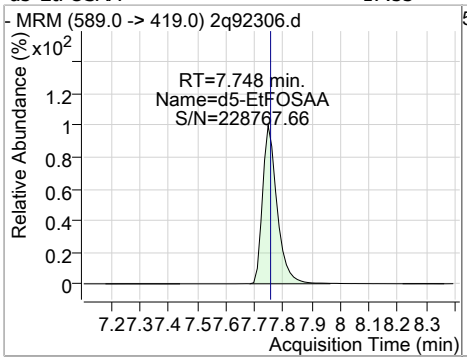


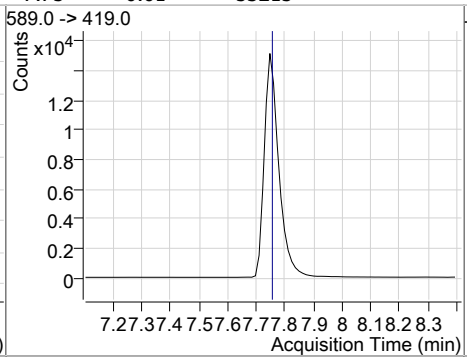


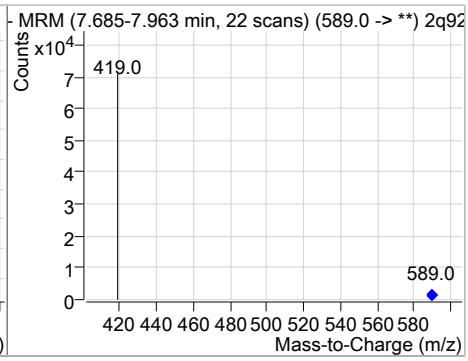


Perfluorinated Compounds by LC/MS/MS

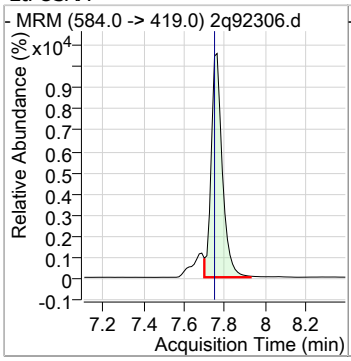
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	17.53	7.75	-0.01	53215				

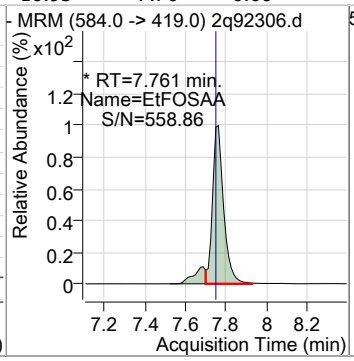


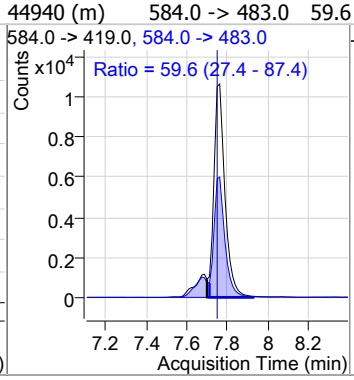


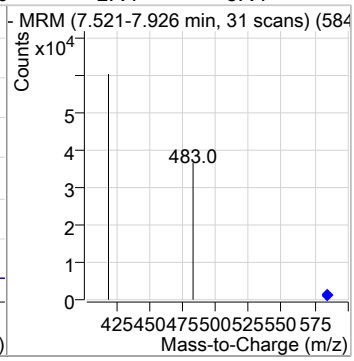


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	16.95	7.76	0.00	44940 (m)	584.0 -> 483.0	59.6	27.4	87.4

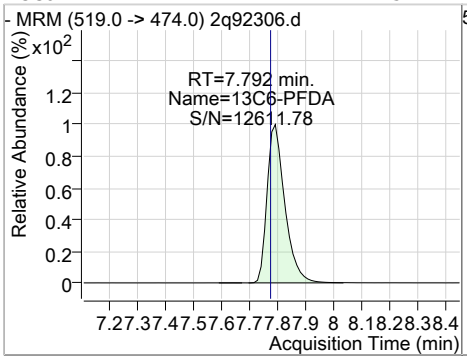


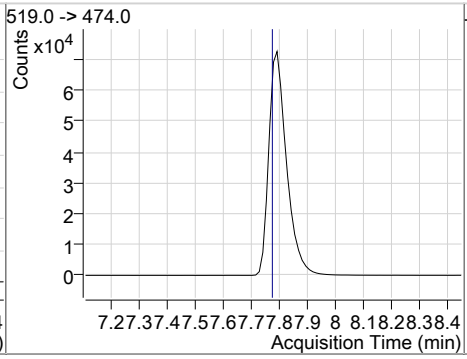


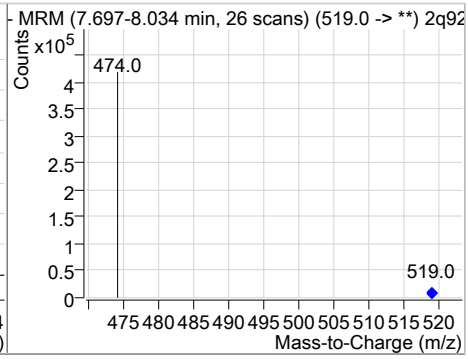




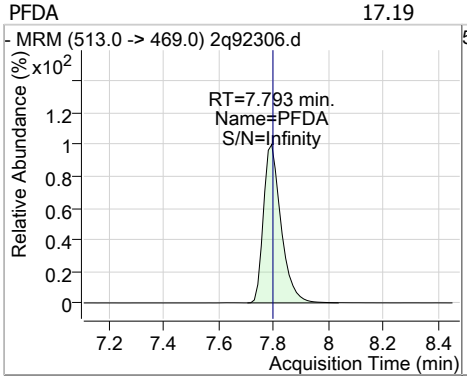
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.51	7.79	0.01	318887				

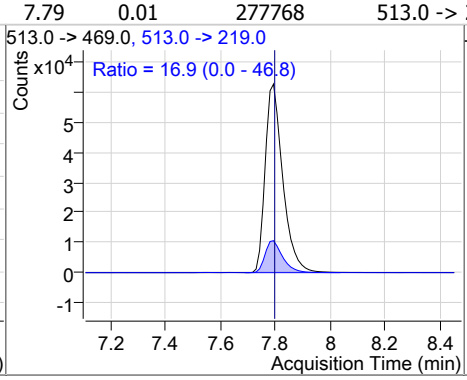


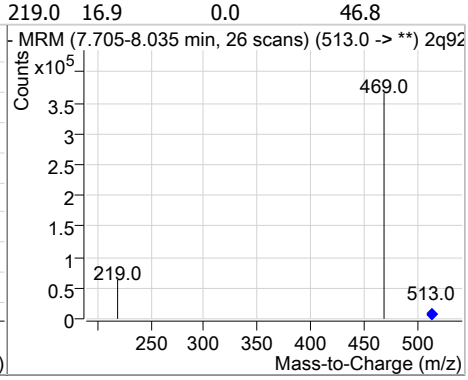




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.19	7.79	0.01	277768	513.0 -> 219.0	16.9	0.0	46.8

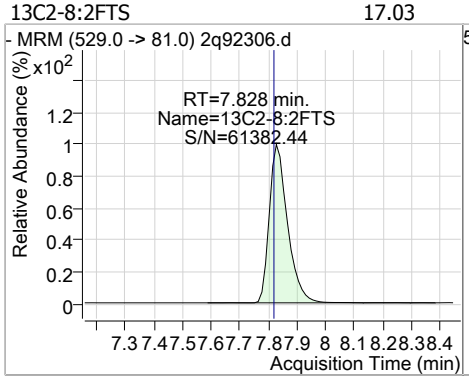


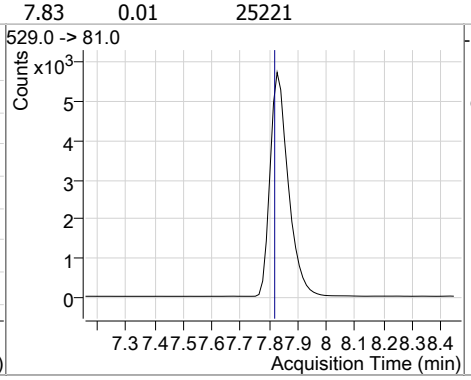


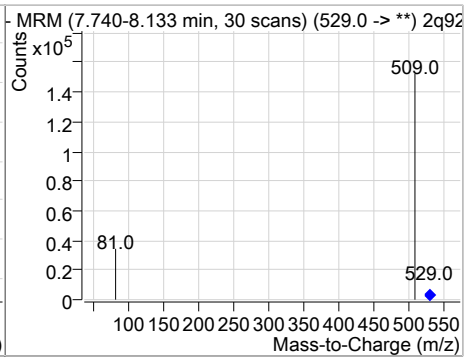


Perfluorinated Compounds by LC/MS/MS

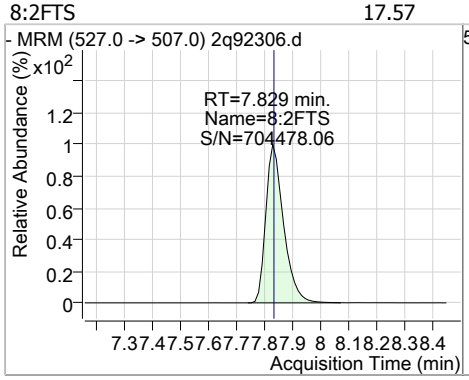
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.03	7.83	0.01	25221				

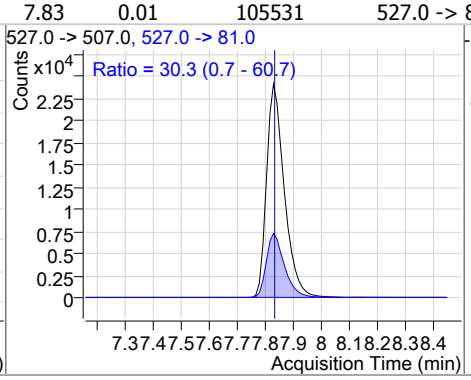


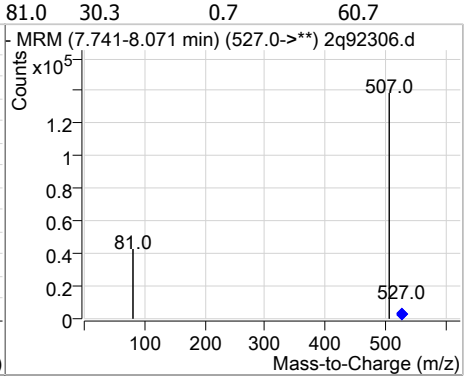




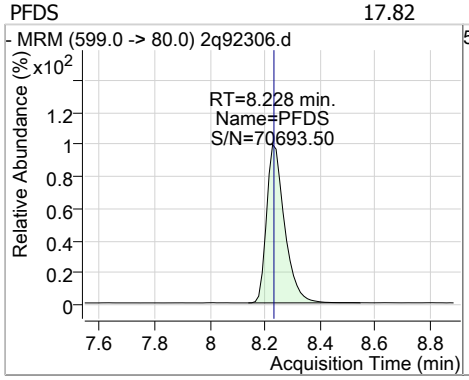
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	17.57	7.83	0.01	105531	527.0 -> 81.0	30.3	0.7	60.7

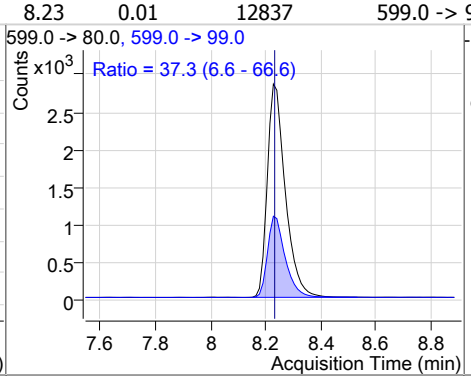


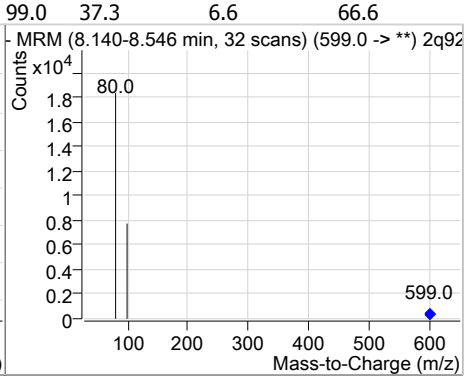




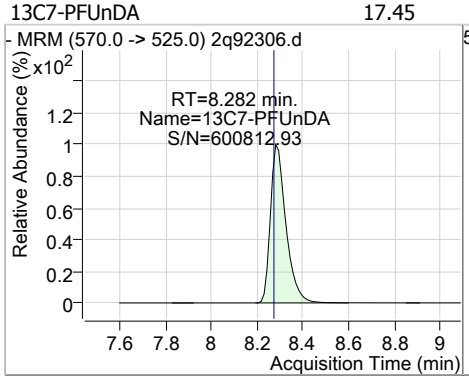
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.82	8.23	0.01	12837	599.0 -> 99.0	37.3	6.6	66.6

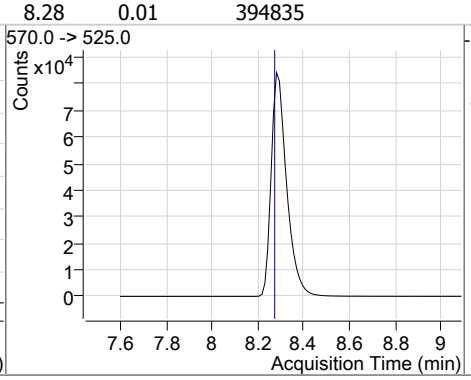


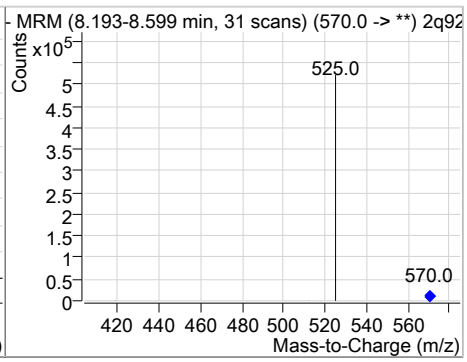




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.45	8.28	0.01	394835				

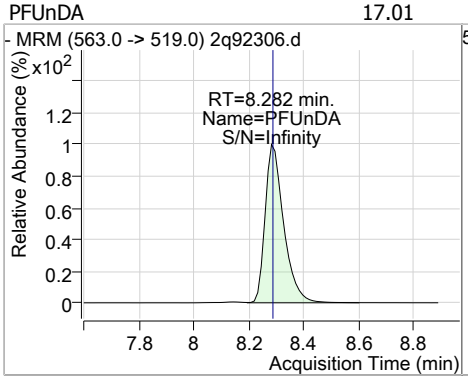


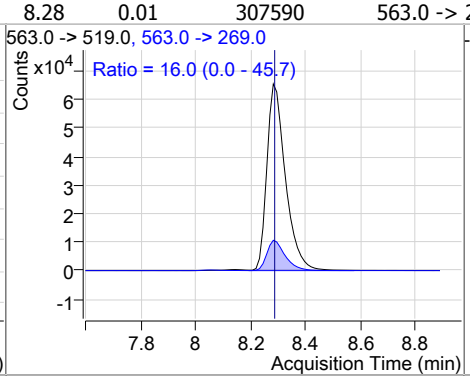


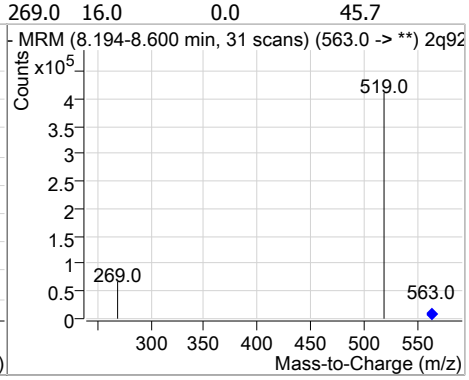


Perfluorinated Compounds by LC/MS/MS

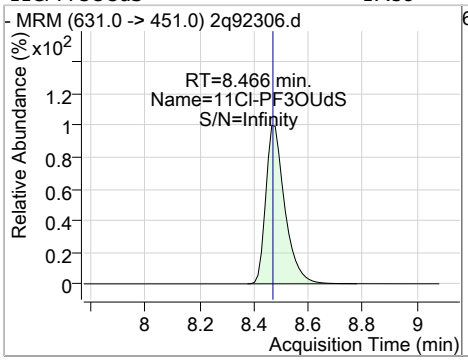
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	17.01	8.28	0.01	307590	563.0 -> 269.0	16.0	0.0	45.7

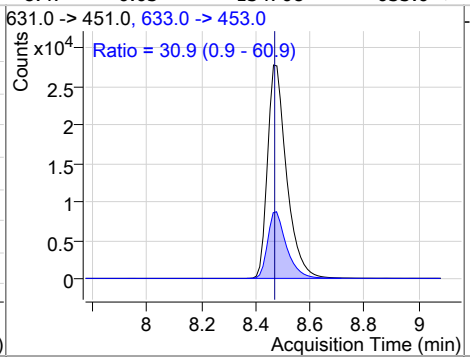


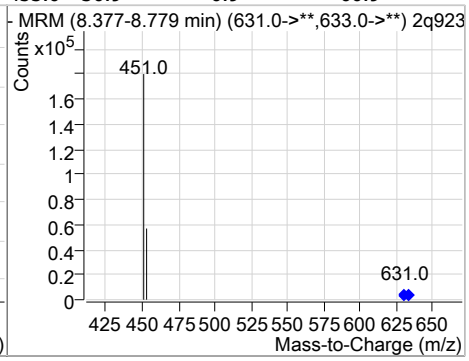




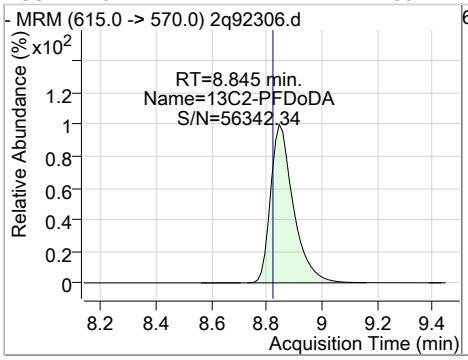
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.58	8.47	0.03	134708	633.0 -> 453.0	30.9	0.9	60.9

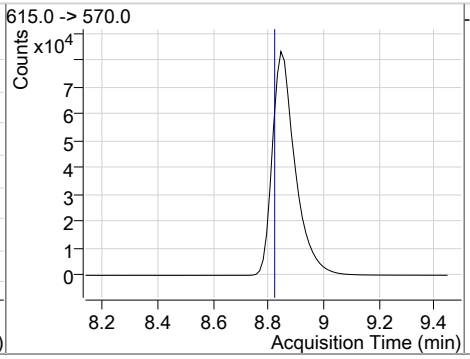


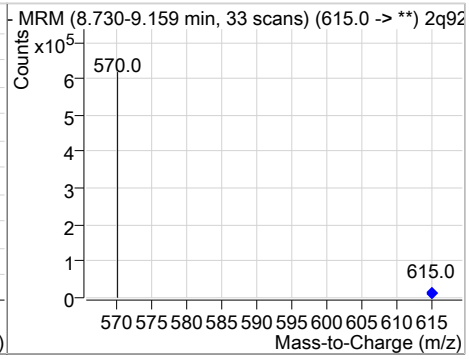




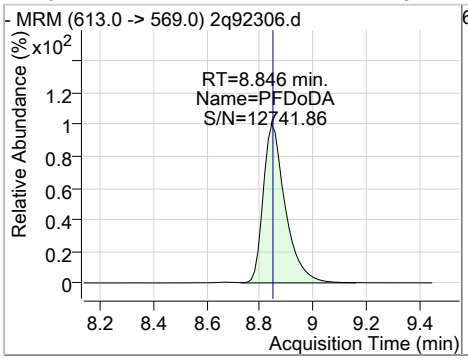
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.60	8.84	0.03	475468				

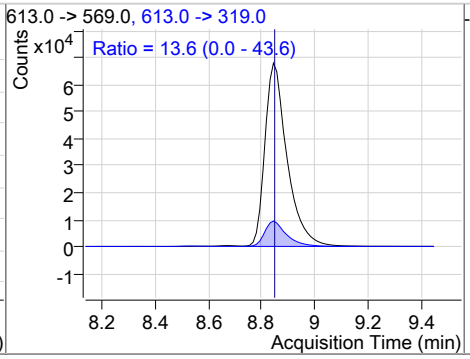


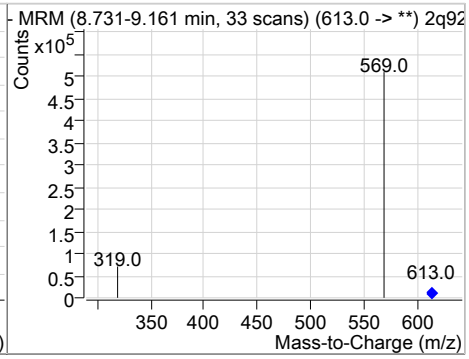




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	17.19	8.85	0.03	392091	613.0 -> 319.0	13.6	0.0	43.6

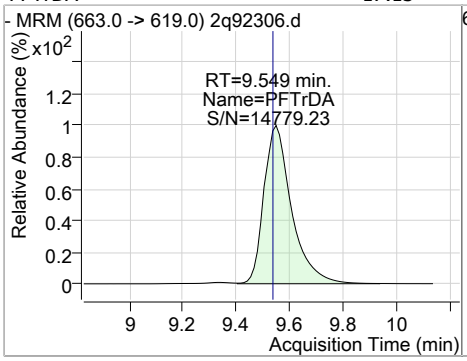


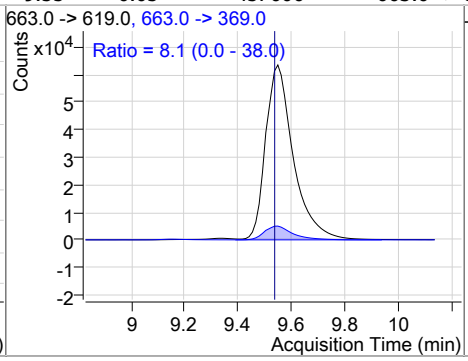


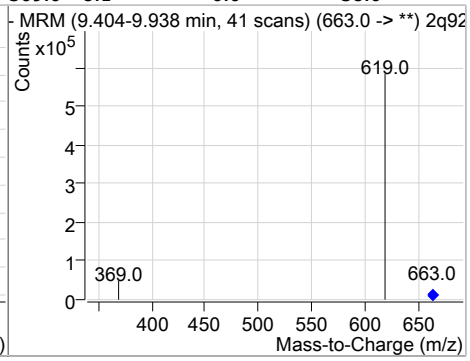


Perfluorinated Compounds by LC/MS/MS

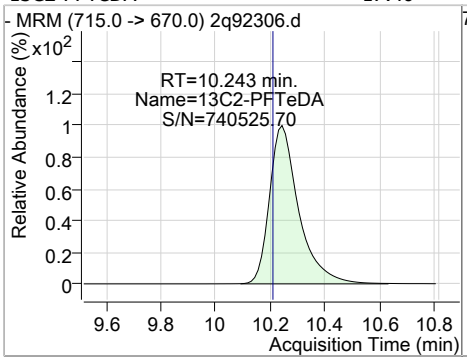
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	17.13	9.55	0.05	457606	663.0 -> 369.0	8.1	0.0	38.0

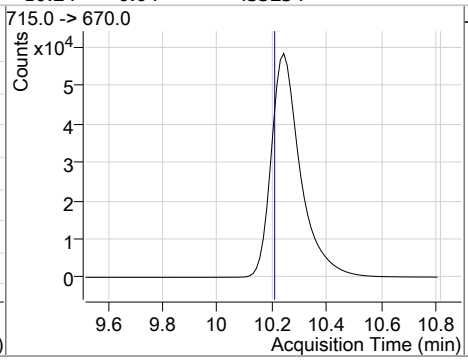


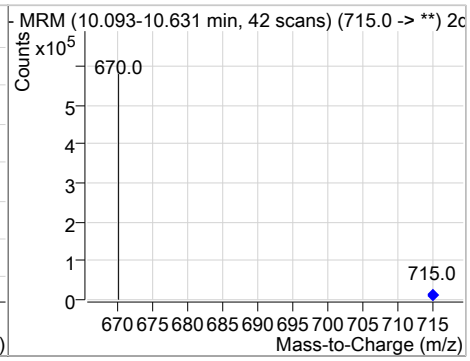




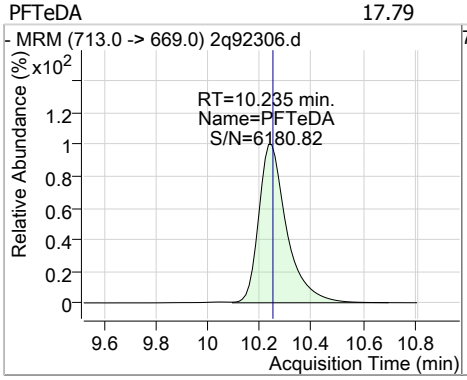
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.40	10.24	0.04	433234				

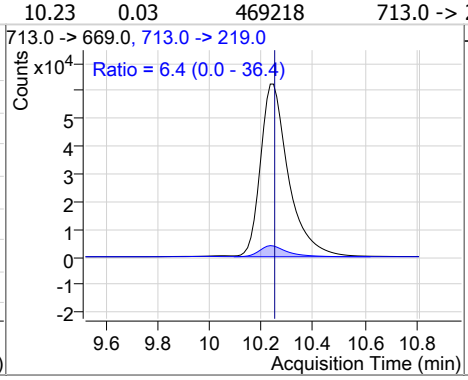


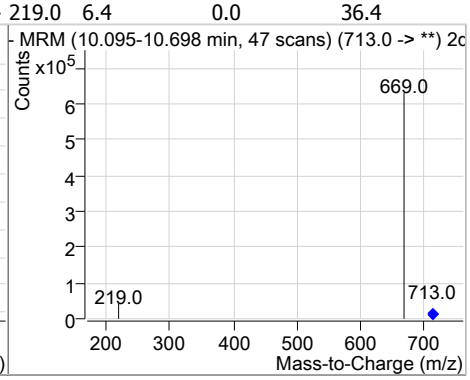




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.79	10.23	0.03	469218	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1293-CC1287
Lab FileID: 2Q92306.D
Injection Time: 06/02/22 15:12
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92307.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 3:31:30 PM
Sample Name : cc1287-1.0LL
Vial : P1-A3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

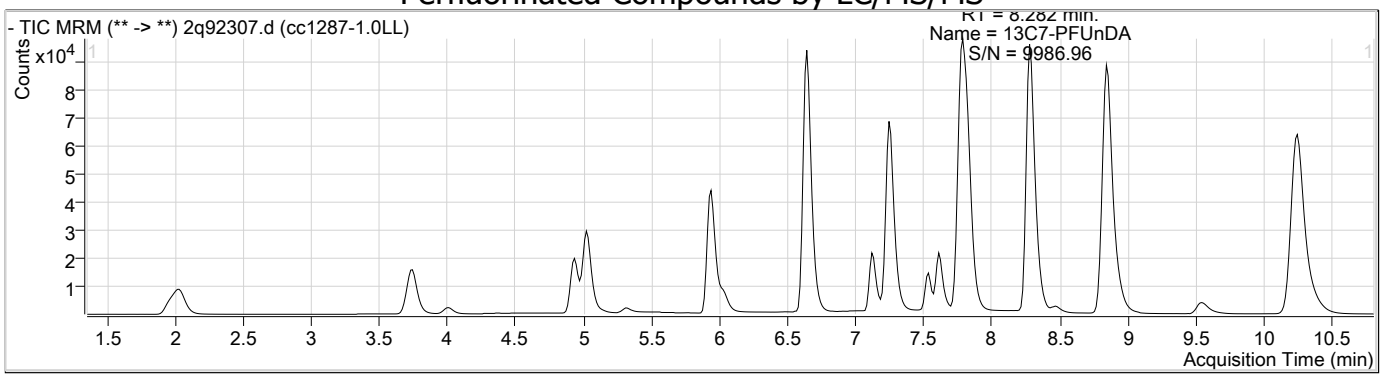
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	56556	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	69404	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	80172	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	119900	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	170431	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	236663	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	261244	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	340160	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	419427	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	482007	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	446496	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	70541	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	9218	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	13359	20.00	µg/L	0.000
M8-PFOS	7.237	507.0 -> 99.0	18400	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	8589	20.00	µg/L	0.000
M2-6:2FTS	6.646	429.0 -> 81.0	18899	20.00	µg/L	0.013
M2-8:2FTS	7.829	529.0 -> 81.0	27005	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	66554	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4851	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	24077	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8589	18.46	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%		
13C2-6:2FTS	6.646	429.0 -> 81.0	18899	18.27	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%		
13C2-8:2FTS	7.829	529.0 -> 81.0	27005	18.24	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C2-PFDoDA	8.845	615.0 -> 570.0	482007	17.84	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%		
13C2-PFTeDA	10.243	715.0 -> 670.0	446496	17.94	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.7%		
13C3-PFBS	4.004	302.0 -> 99.0	9218	18.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%		
13C3-PFHxS	5.967	402.0 -> 99.0	13359	18.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.7%		
13C4-PFBA	2.027	217.0 -> 172.0	69404	17.96	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%		
13C4-PFHpA	5.941	367.0 -> 322.0	170431	18.36	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%		
d5-EtFOSAA	7.748	589.0 -> 419.0	56556	18.63	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.2%		
13C5-PFHxA	5.027	318.0 -> 273.0	119900	17.76	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%		
13C5-PFPeA	3.749	268.0 -> 223.0	80172	17.59	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

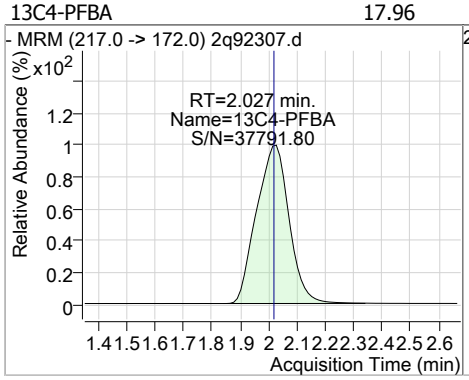
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%			
13C6-PFDA	7.792	519.0 -> 474.0	340160	18.68	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.4%			
13C7-PFUnDA	8.282	570.0 -> 525.0	419427	18.54	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.7%			
13C8-FOSA	7.124	506.0 -> 78.0	70541	19.17	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%			
13C8-PFOA	6.649	421.0 -> 376.0	236663	18.38	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%			
13C8-PFOS	7.237	507.0 -> 99.0	18400	17.73	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%			
13C9-PFNA	7.252	472.0 -> 427.0	261244	17.91	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.6%			
d3-MeFOSAA	7.610	573.0 -> 419.0	66554	17.35	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.8%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4851	18.63	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%			
d3-MeFOSA	7.539	515.0 -> 169.0	24077	17.20	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.0%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	4491	1.00	µg/L		95
6:2FTS	6.647	427.0 -> 407.0	6836	0.98	µg/L		97
8:2FTS	7.829	527.0 -> 507.0	6637	1.03	µg/L		99
EtFOSAA	7.748	584.0 -> 419.0	2973	1.05	µg/L	m	94
FOSA	7.125	498.0 -> 78.0	3812	1.03	µg/L		98
MeFOSAA	7.611	570.0 -> 419.0	3334	1.09	µg/L	m	98
PFBA	2.021	213.0 -> 169.0	1841	1.03	µg/L		100
PFBS	3.994	299.0 -> 80.0	1609	1.05	µg/L		100
PFDA	7.793	513.0 -> 469.0	16602	0.96	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	22767	0.98	µg/L		99
PFDS	8.228	599.0 -> 80.0	812	1.06	µg/L		97
PFHpA	5.943	363.0 -> 319.0	13939	1.00	µg/L		99
PFHpS	6.645	449.0 -> 80.0	1616	1.03	µg/L		99
PFHxA	5.028	313.0 -> 269.0	4473	1.01	µg/L		98
PFHxS	5.967	399.0 -> 80.0	1707	1.02	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	14589	1.00	µg/L		97
PFNS	7.751	549.0 -> 80.0	1435	1.11	µg/L		94
PFOA	6.649	413.0 -> 369.0	13081	1.02	µg/L		99
PFOS	7.238	499.0 -> 80.0	1774	1.10	µg/L	m	93
PFPeA	3.751	263.0 -> 219.0	6550	1.06	µg/L		100
PFPeS	5.145	349.0 -> 80.0	1154	1.10	µg/L		97
PFTeDA	10.247	713.0 -> 669.0	27785	1.02	µg/L		99
PFTrDA	9.549	663.0 -> 619.0	26668	0.98	µg/L		98
PFUnDA	8.282	563.0 -> 519.0	18547	0.97	µg/L		98
11Cl-PF3OUdS	8.466	631.0 -> 451.0	7823	1.01	µg/L		97
9Cl-PF3ONS	7.511	531.0 -> 351.0	1894	1.03	µg/L		99
ADONA	6.044	377.0 -> 251.0	17466	0.98	µg/L		99
HFPO-DA	5.326	329.0 -> 169.0	1808	1.03	µg/L		97
MeFOSA	7.541	512.0 -> 219.0	1051	1.03	µg/L		93

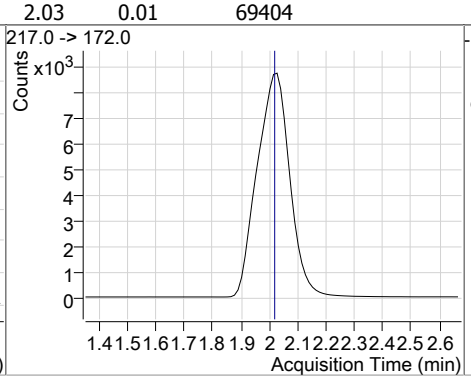
= Qualifier out of range, m = manually integrated, + = Area summed

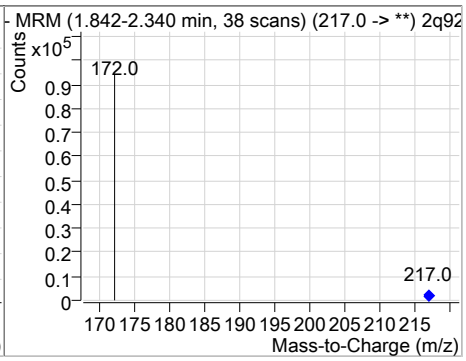
Perfluorinated Compounds by LC/MS/MS



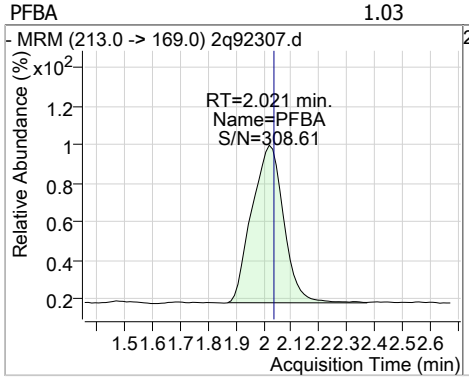
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.96	2.03	0.01	69404				

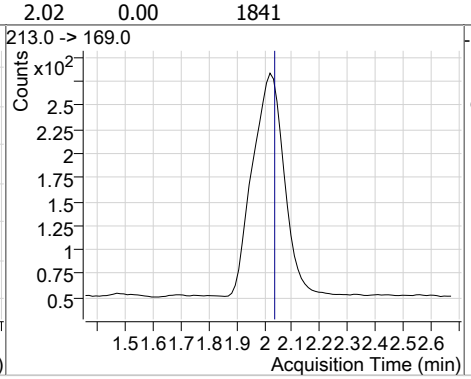


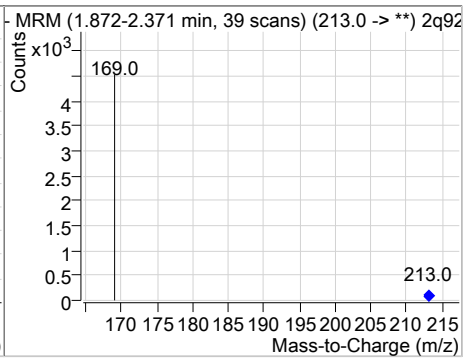




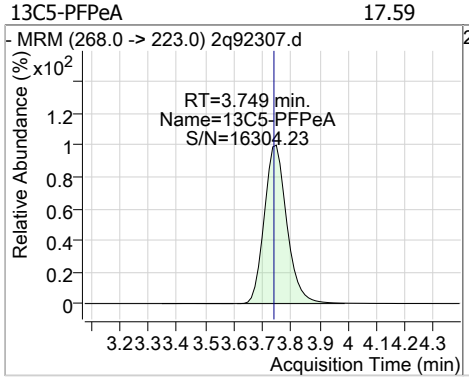
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.03	2.02	0.00	1841				

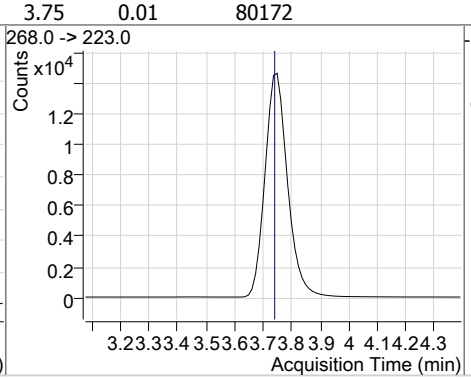


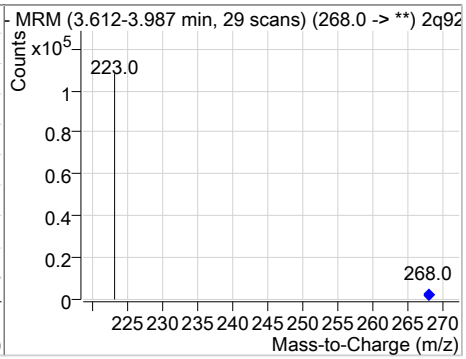




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.59	3.75	0.01	80172				

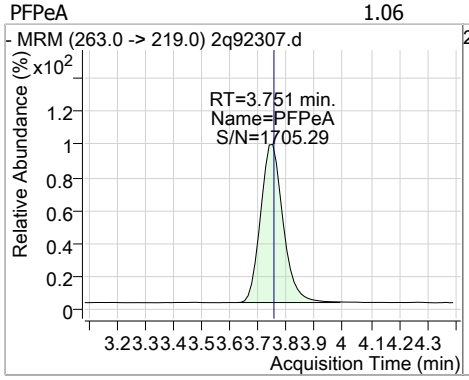


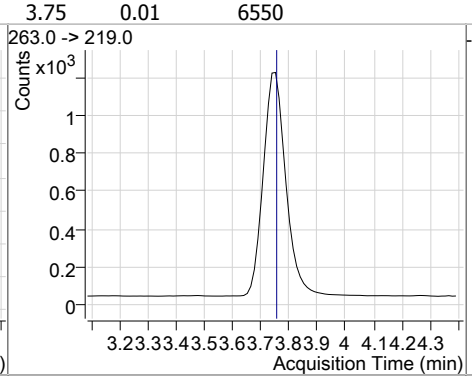


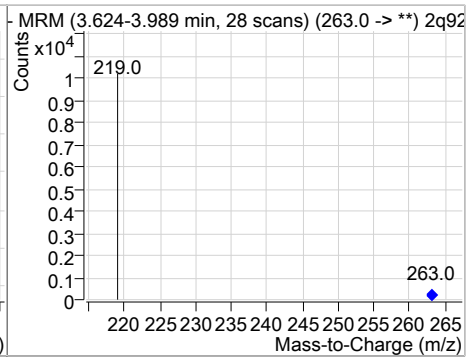


Perfluorinated Compounds by LC/MS/MS

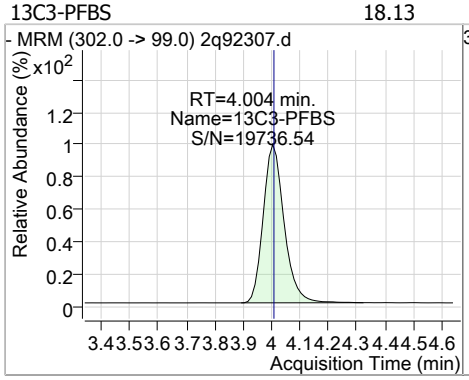
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.06	3.75	0.01	6550				

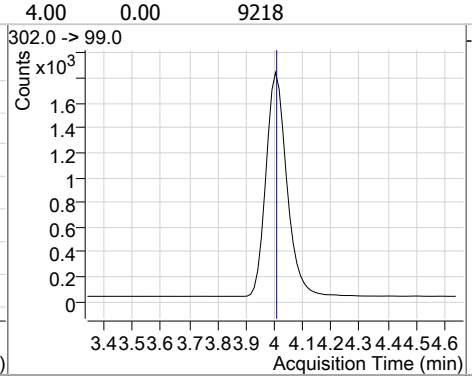


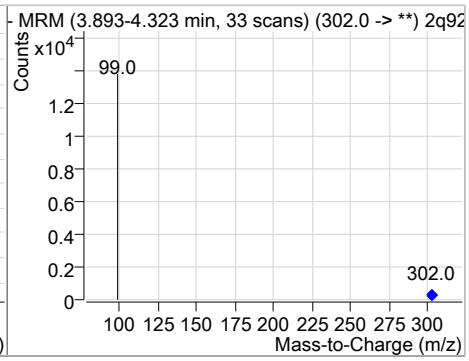




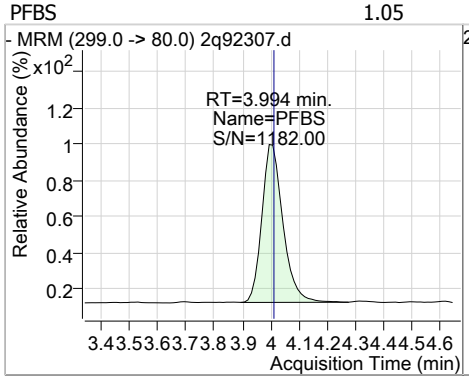
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.13	4.00	0.00	9218				

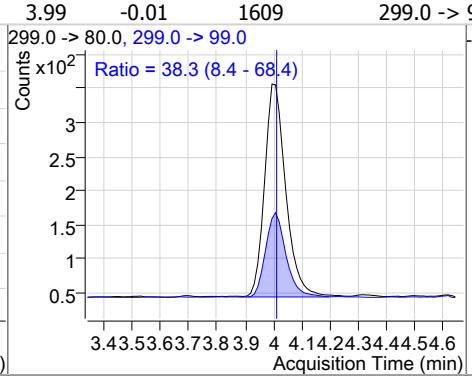


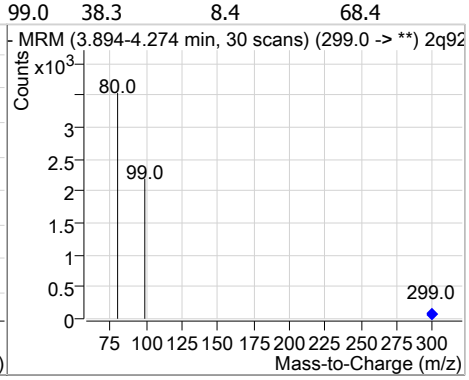




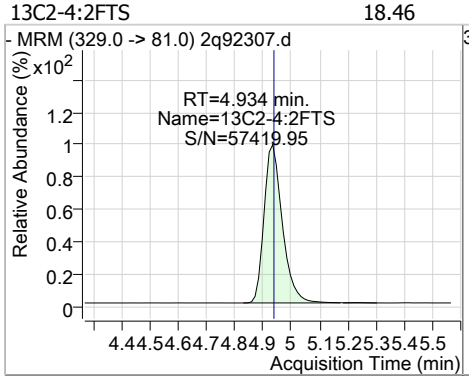
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.05	3.99	-0.01	1609	299.0 -> 99.0	38.3	8.4	68.4

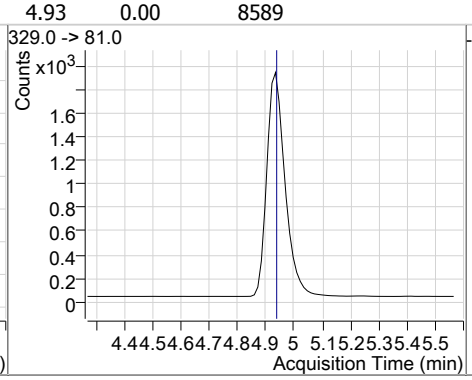


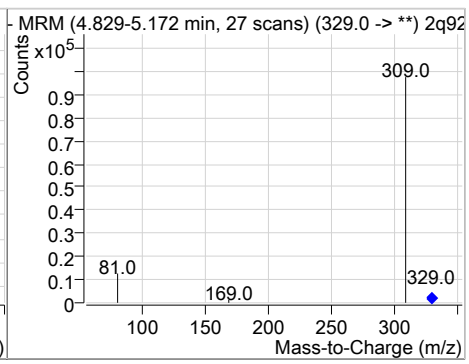




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.46	4.93	0.00	8589				

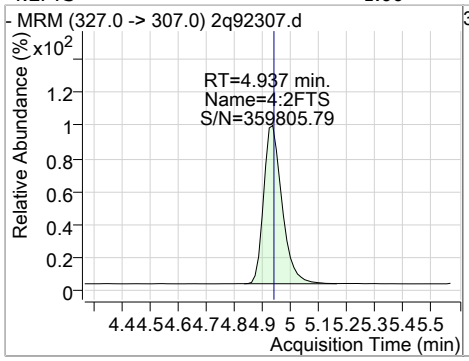


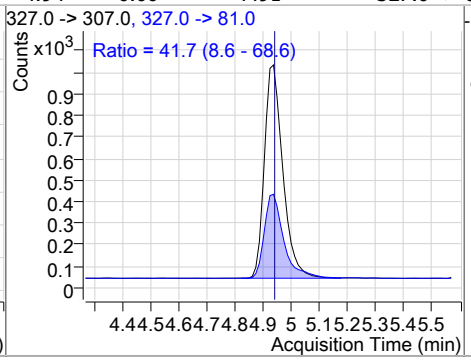


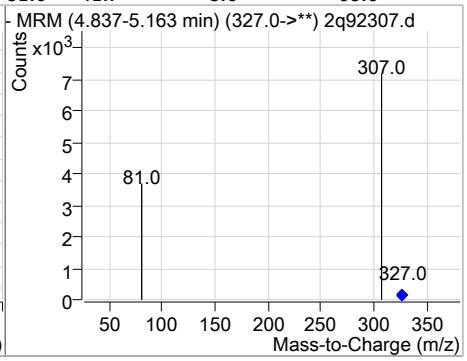


Perfluorinated Compounds by LC/MS/MS

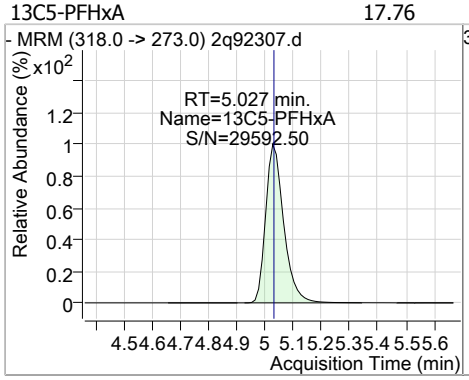
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.00	4.94	0.00	4491	327.0 -> 81.0	41.7	8.6	68.6

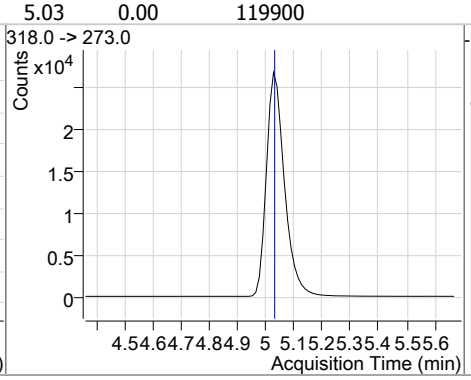


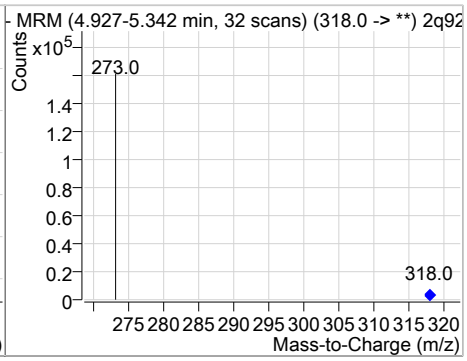




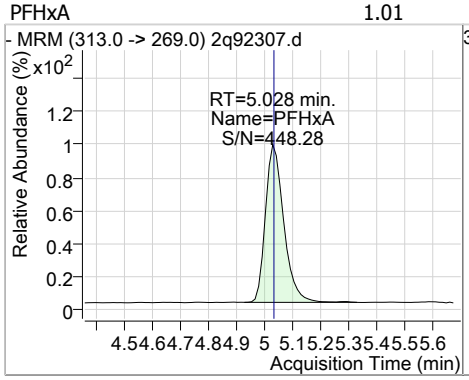
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.76	5.03	0.00	119900				

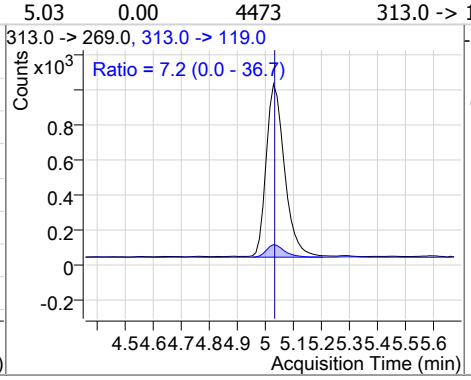


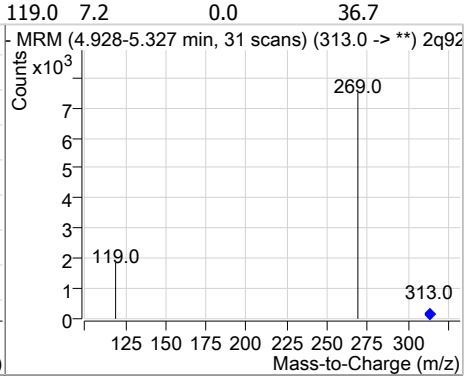




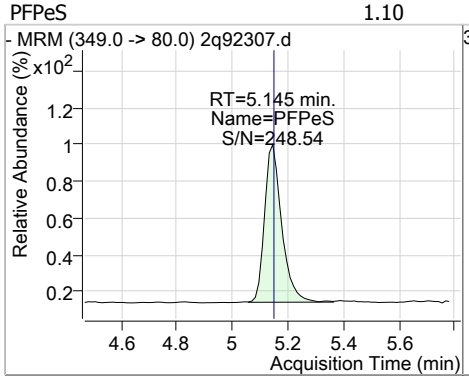
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.01	5.03	0.00	4473	313.0 -> 119.0	7.2	0.0	36.7

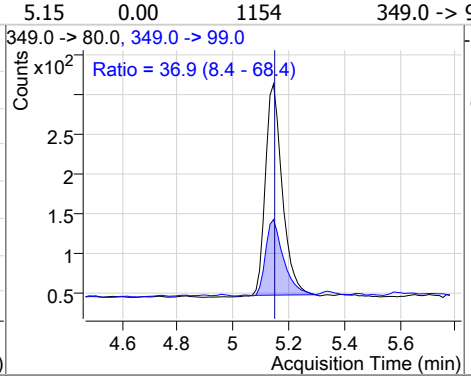


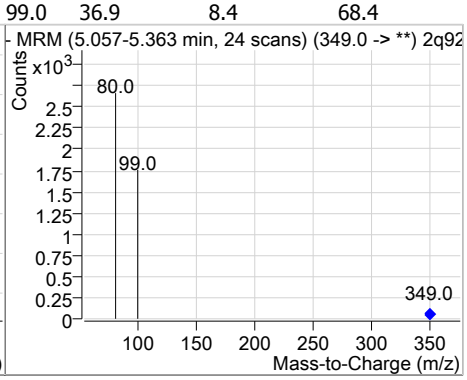




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.10	5.15	0.00	1154	349.0 -> 99.0	36.9	8.4	68.4

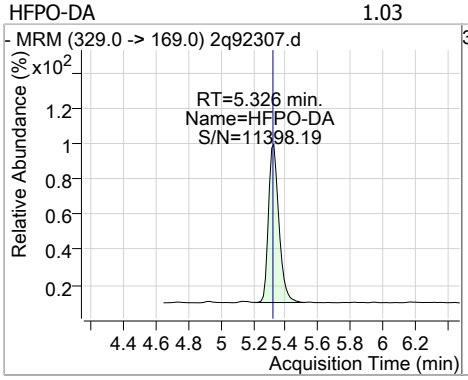


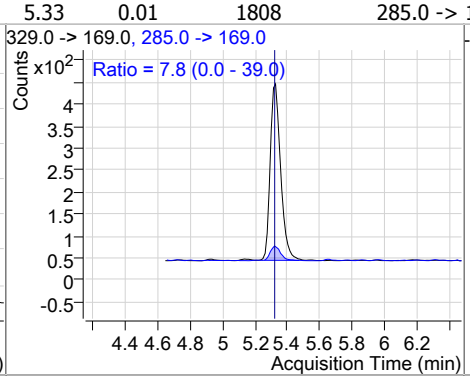


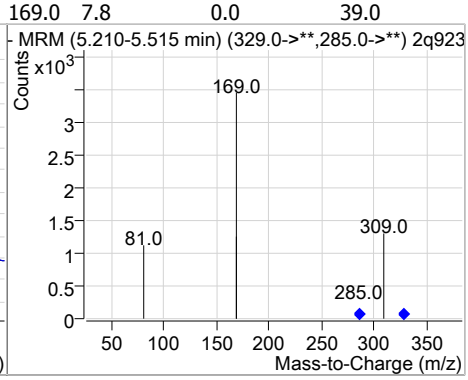


Perfluorinated Compounds by LC/MS/MS

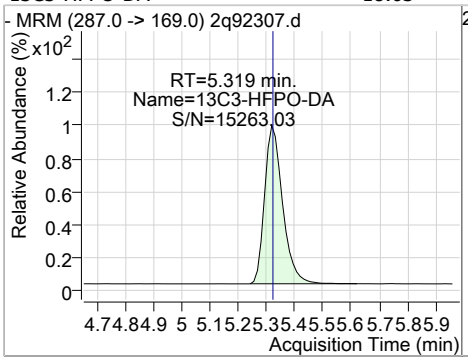
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.03	5.33	0.01	1808	285.0 -> 169.0	7.8	0.0	39.0

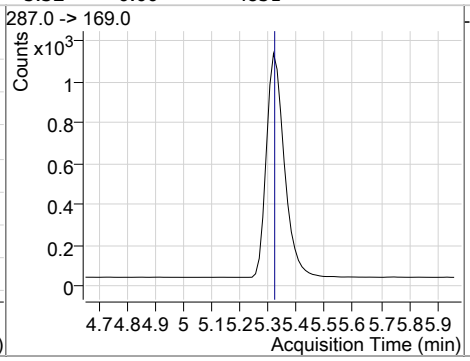


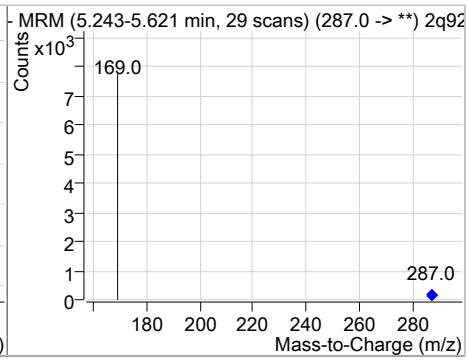




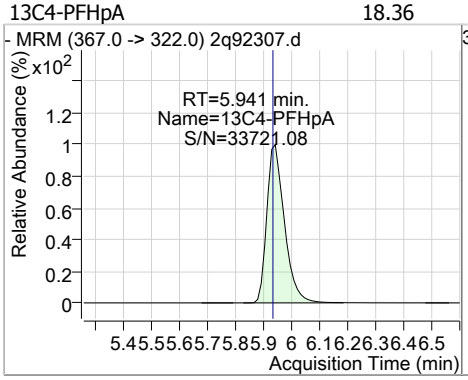
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.63	5.32	0.00	4851				

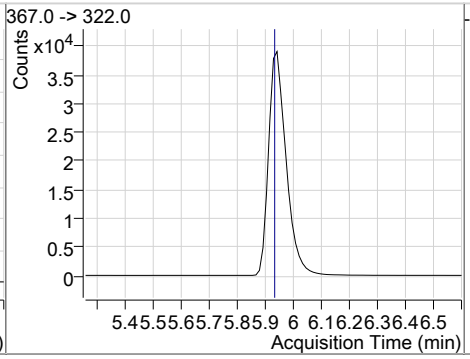


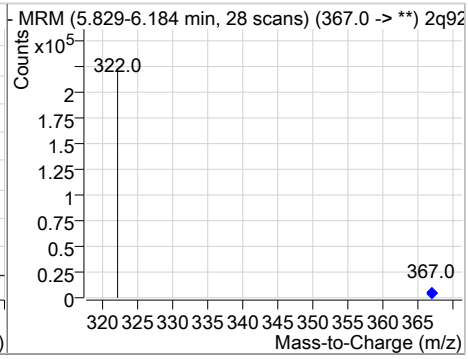




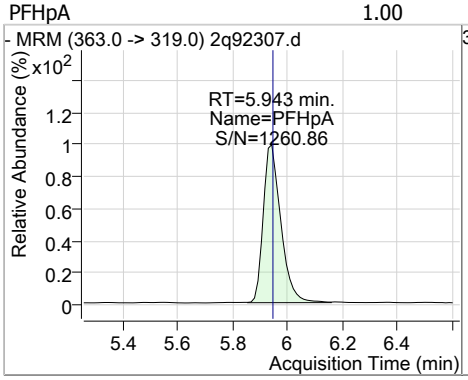
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.36	5.94	0.01	170431				

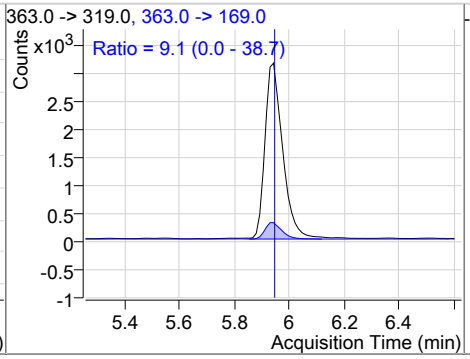


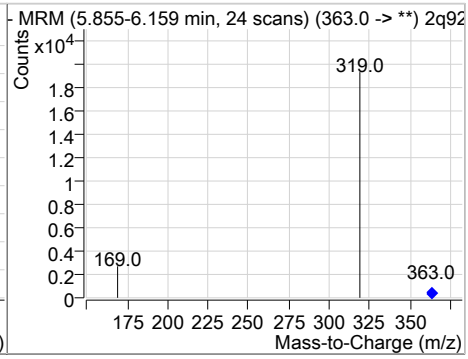




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.00	5.94	0.01	13939	363.0 -> 169.0	9.1	0.0	38.7

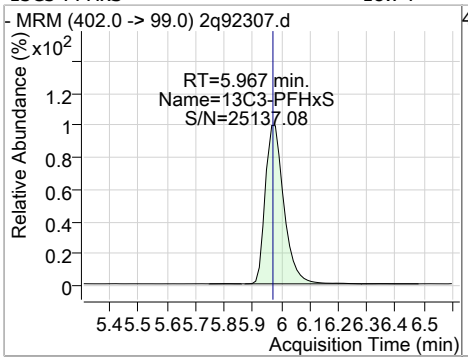


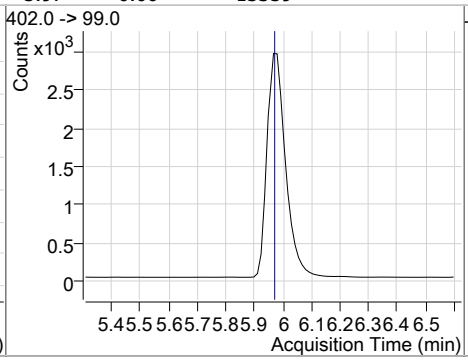


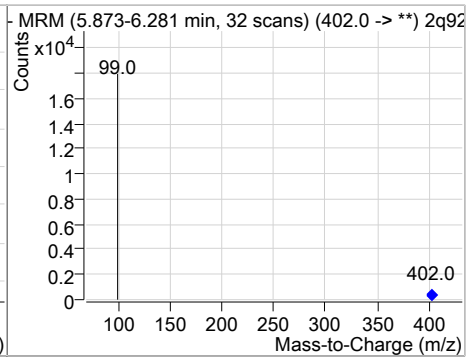


Perfluorinated Compounds by LC/MS/MS

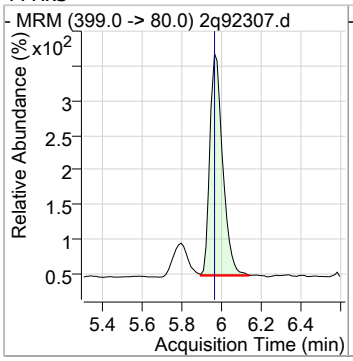
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.74	5.97	0.00	13359				

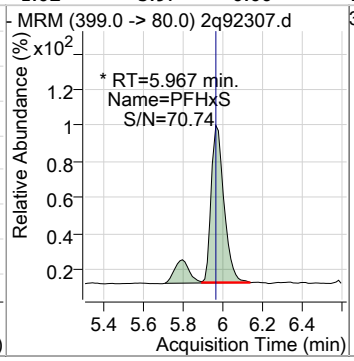


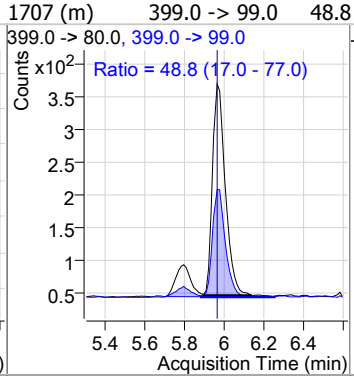


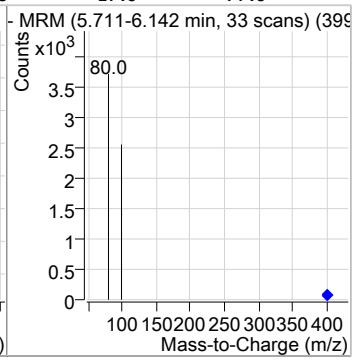


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.02	5.97	0.00	1707 (m)	399.0 -> 99.0	48.8	17.0	77.0

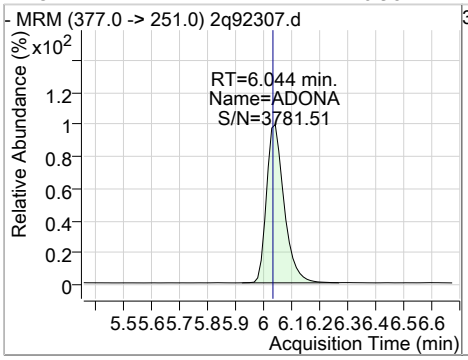


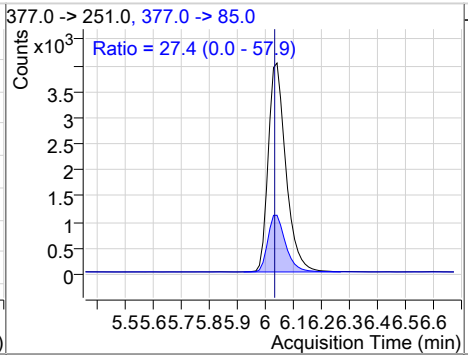


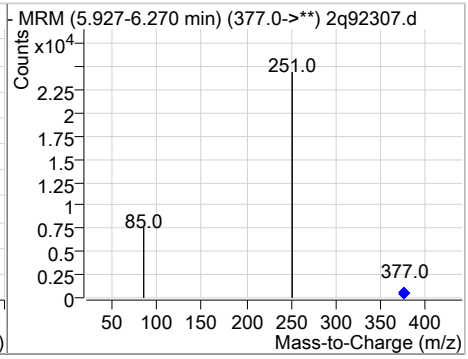




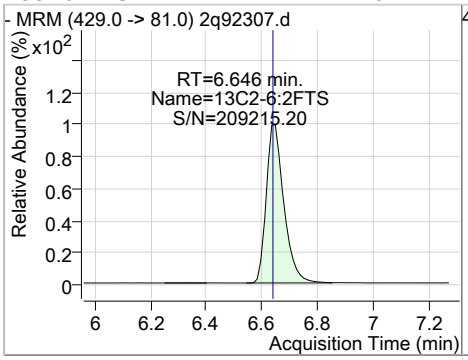
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.98	6.04	0.01	17466	377.0 -> 85.0	27.4	0.0	57.9

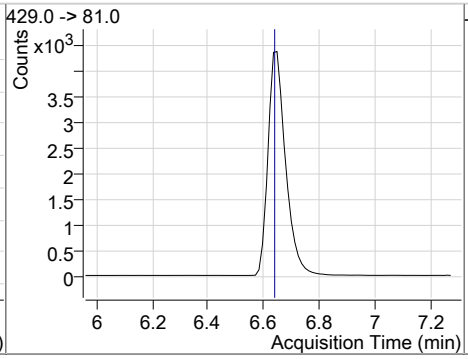


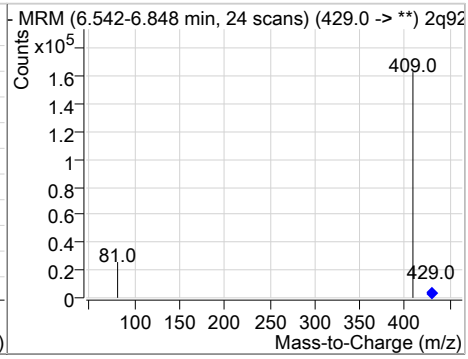




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.27	6.65	0.01	18899				

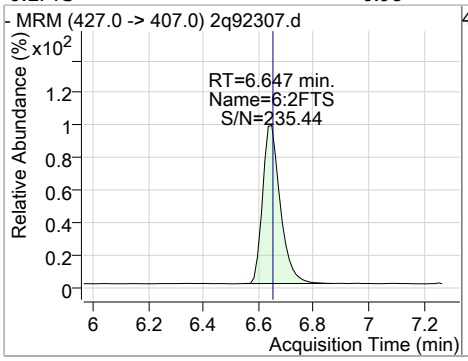


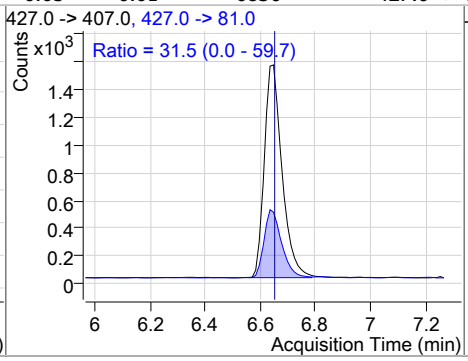


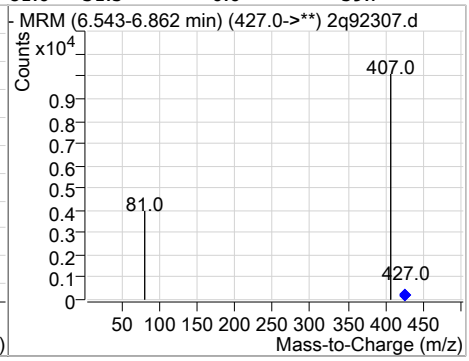


Perfluorinated Compounds by LC/MS/MS

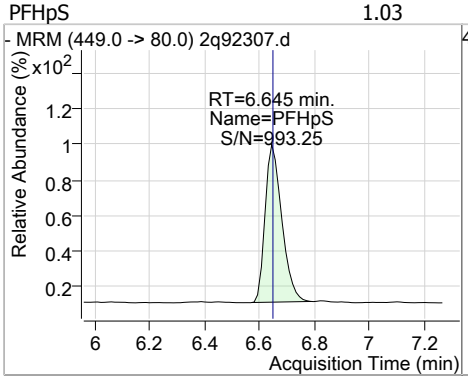
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.98	6.65	0.01	6836	427.0 -> 81.0	31.5	0.0	59.7

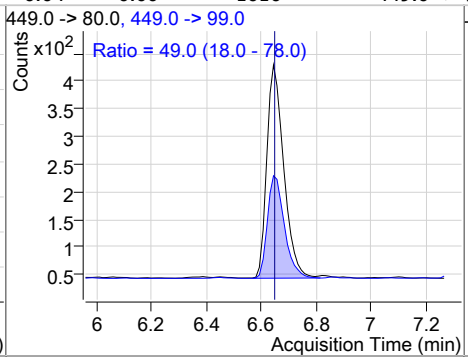


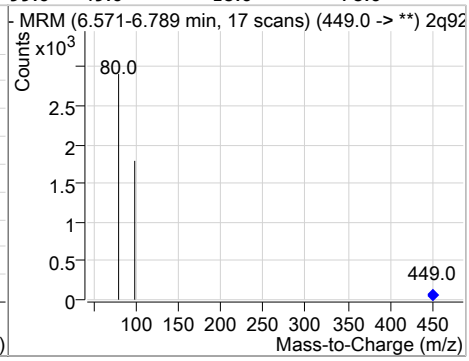




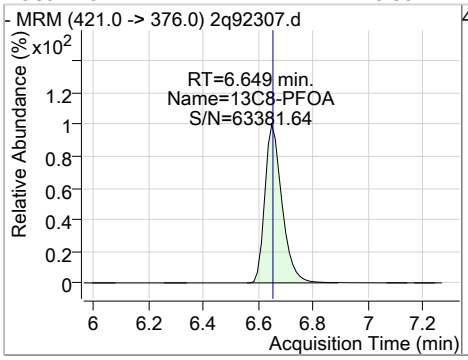
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.03	6.64	0.00	1616	449.0 -> 99.0	49.0	18.0	78.0

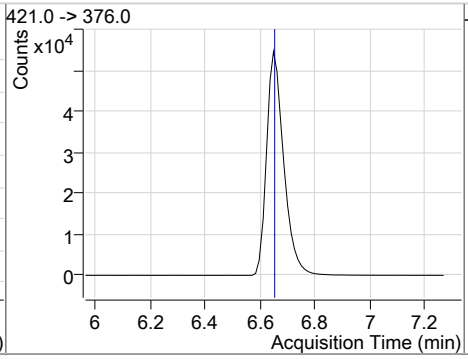


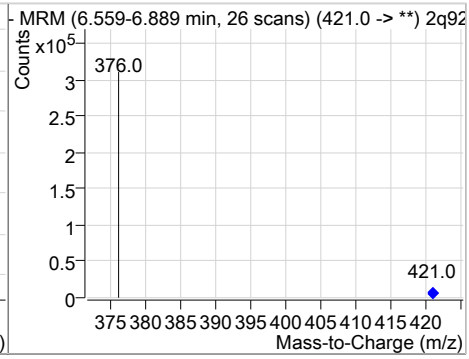




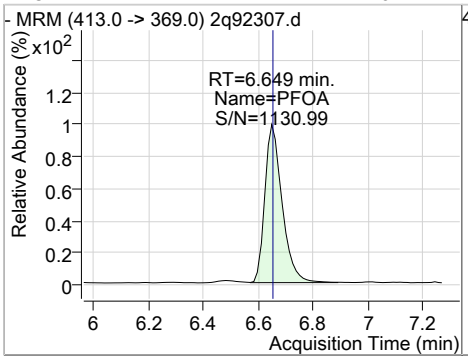
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.38	6.65	0.00	236663				

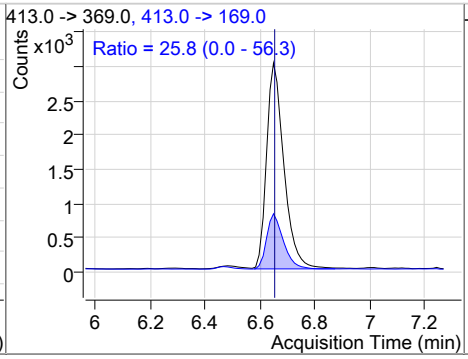


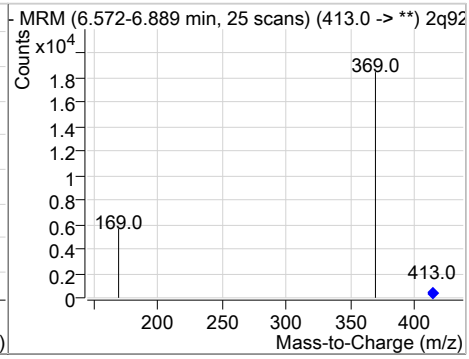




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.02	6.65	0.00	13081	413.0 -> 169.0	25.8	0.0	56.3

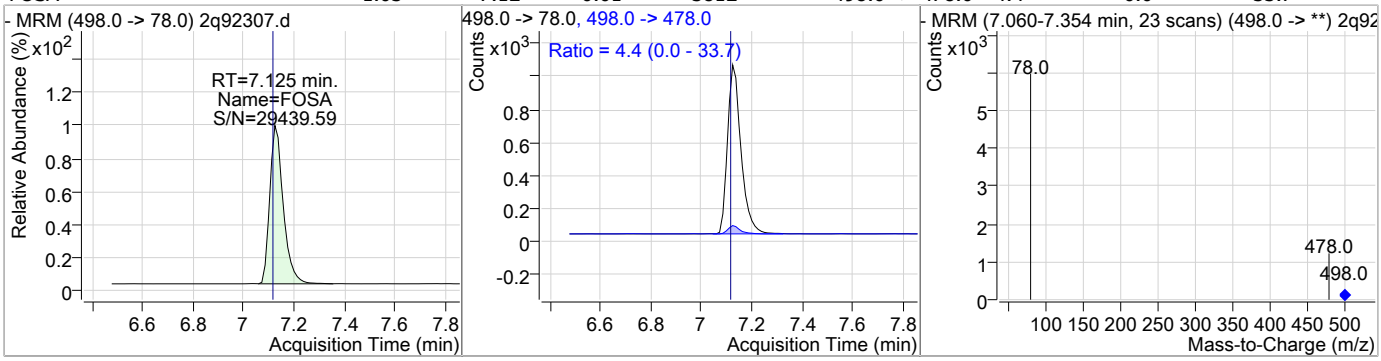




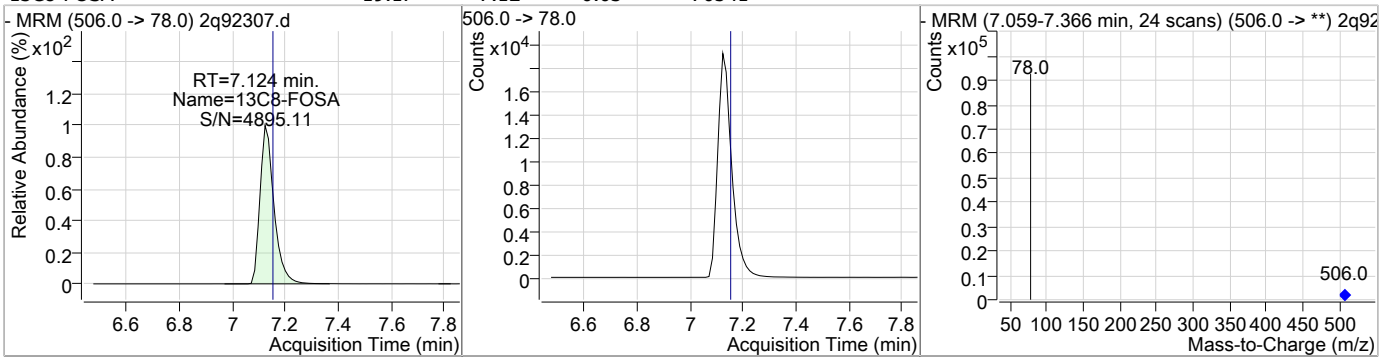


Perfluorinated Compounds by LC/MS/MS

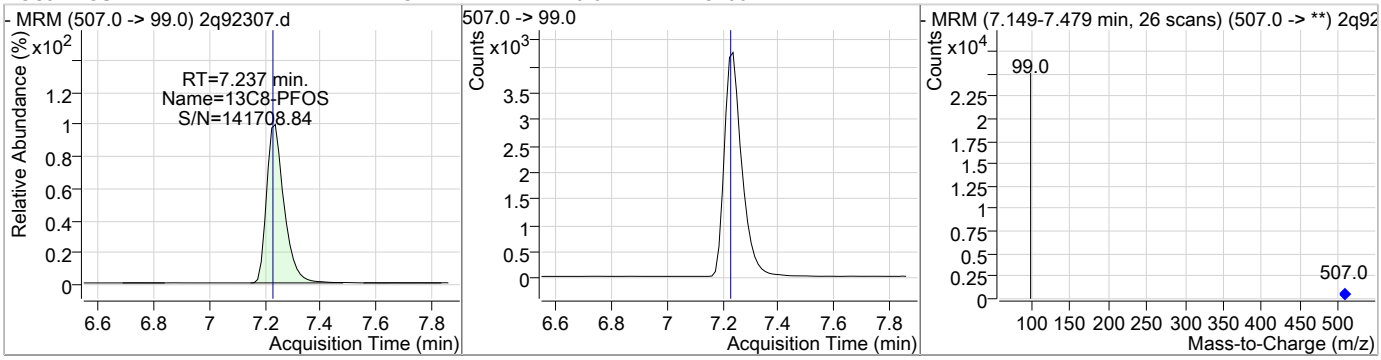
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.03	7.12	-0.01	3812	498.0 -> 478.0	4.4	0.0	33.7



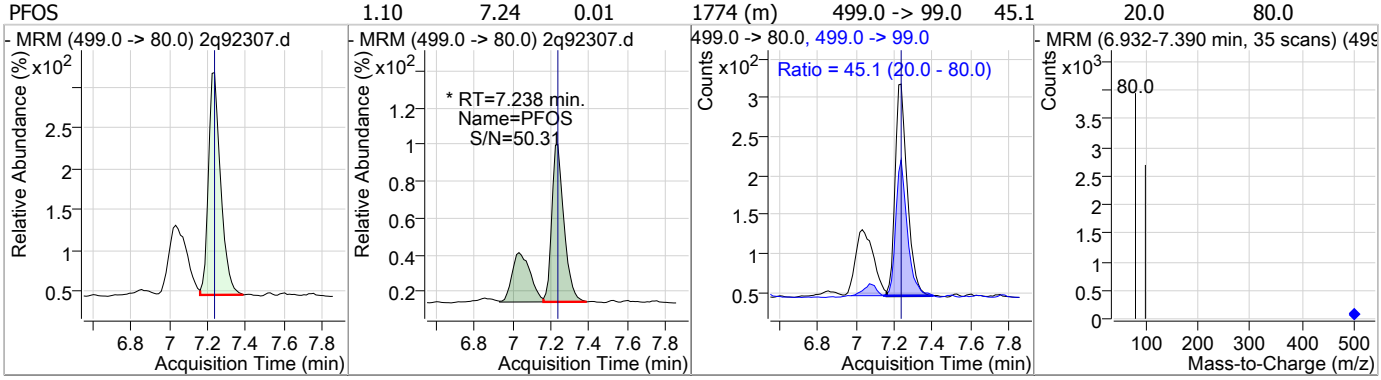
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.17	7.12	-0.03	70541				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.73	7.24	0.01	18400				

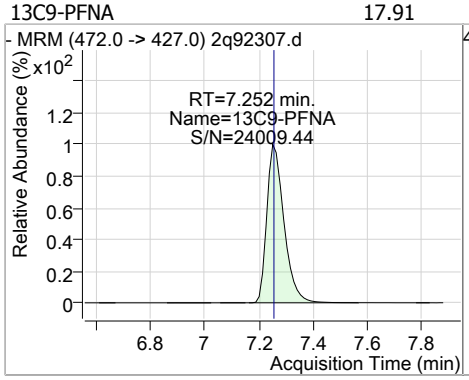


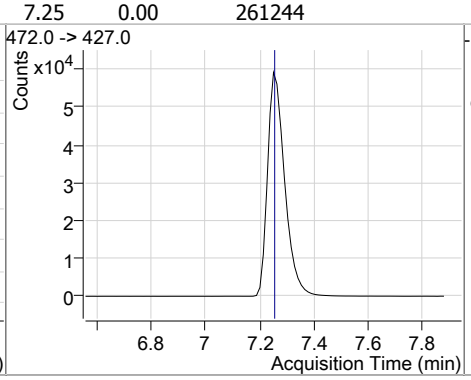
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.10	7.24	0.01	1774 (m)	499.0 -> 99.0	45.1	20.0	80.0

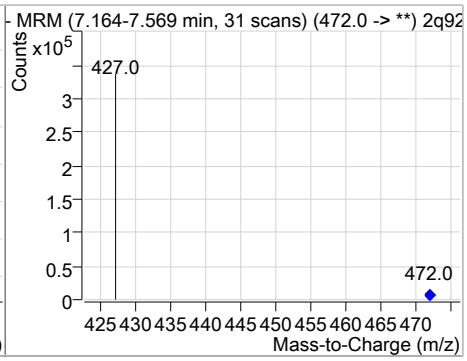


Perfluorinated Compounds by LC/MS/MS

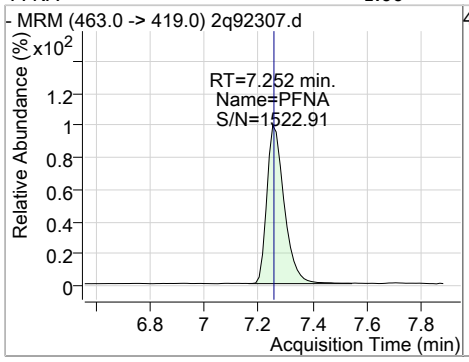
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.91	7.25	0.00	261244				

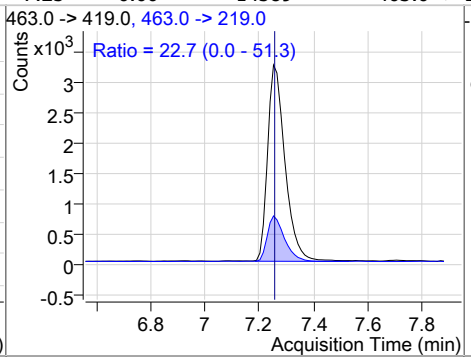


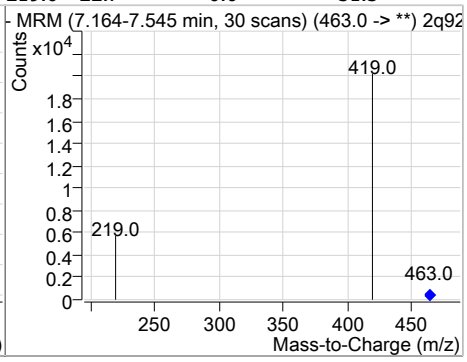




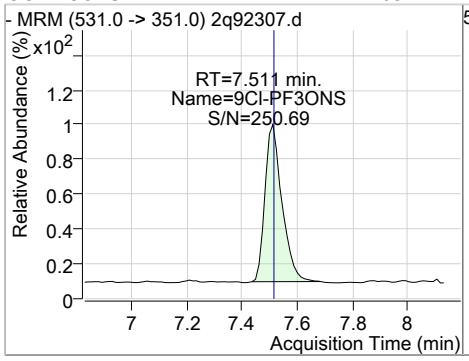
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.00	7.25	0.00	14589	463.0 -> 219.0	22.7	0.0	51.3

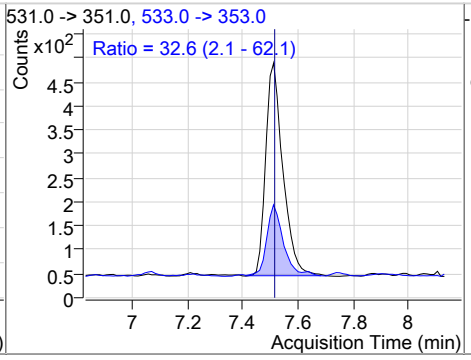


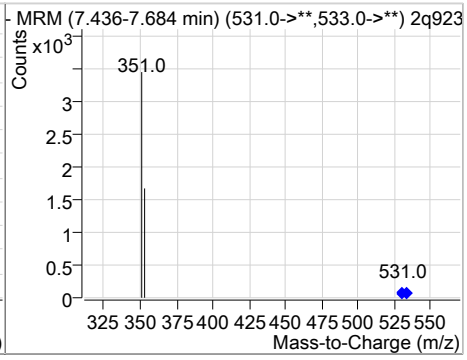




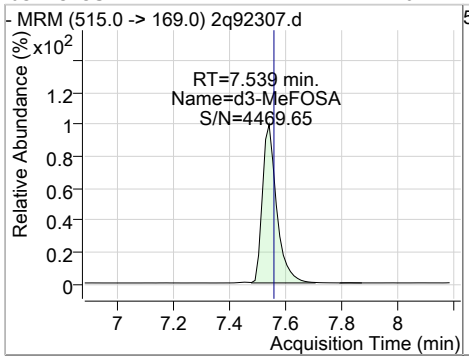
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.03	7.51	0.01	1894	533.0 -> 353.0	32.6	2.1	62.1

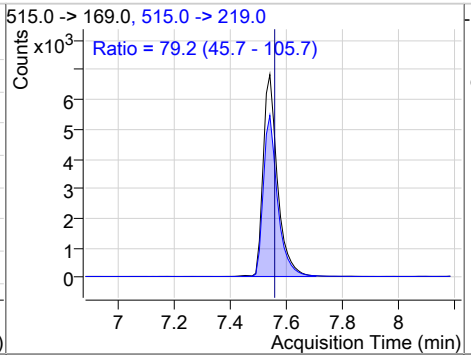


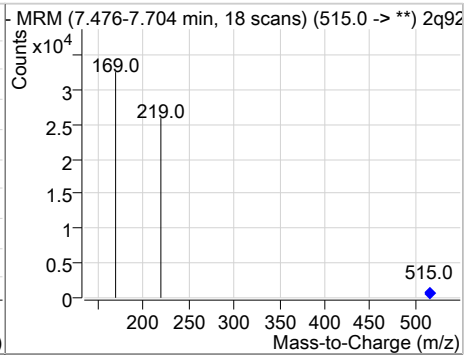




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.20	7.54	-0.01	24077	515.0 -> 219.0	79.2	45.7	105.7

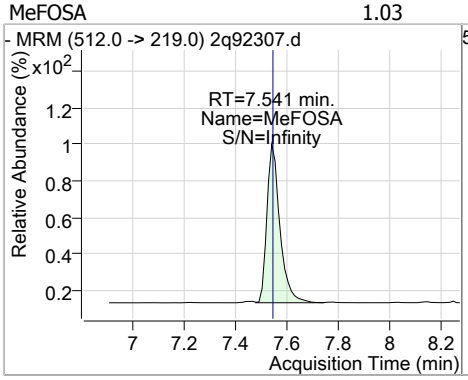


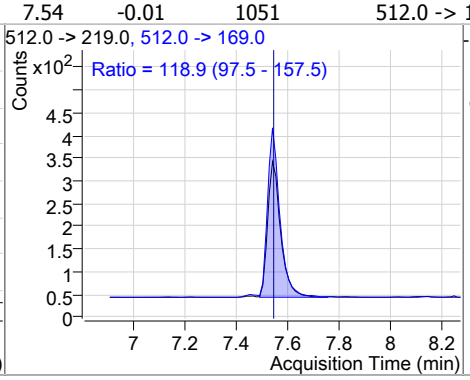


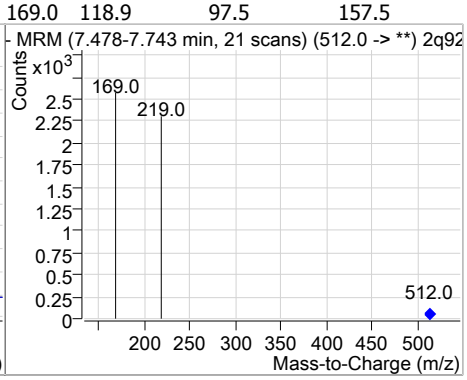


Perfluorinated Compounds by LC/MS/MS

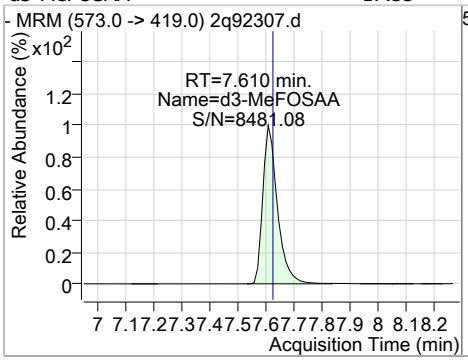
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.03	7.54	-0.01	1051	512.0 -> 169.0	118.9	97.5	157.5

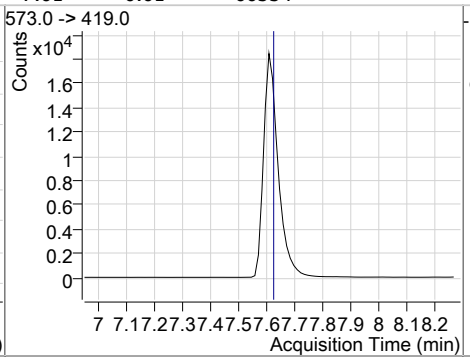


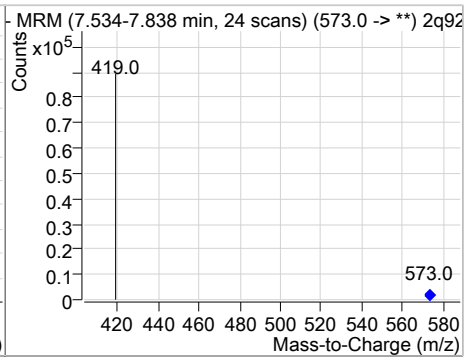




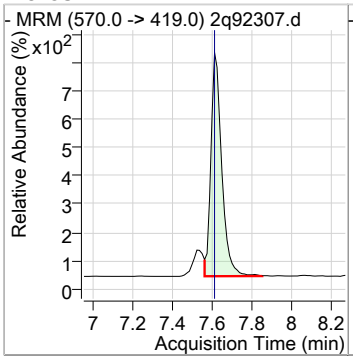
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.35	7.61	-0.01	66554				

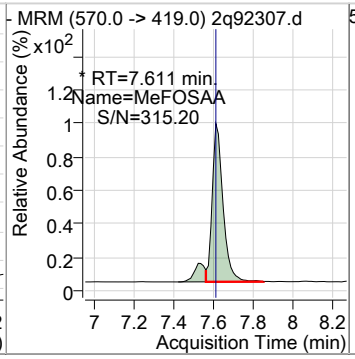


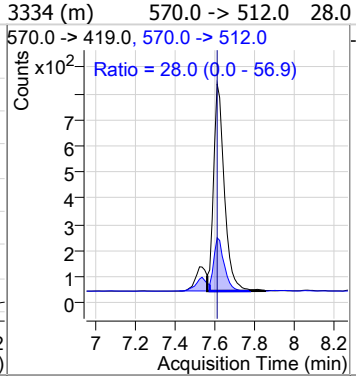


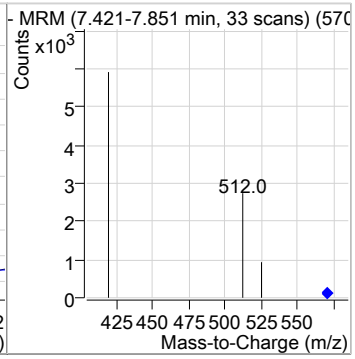


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.09	7.61	-0.01	3334 (m)	570.0 -> 512.0	28.0	0.0	56.9

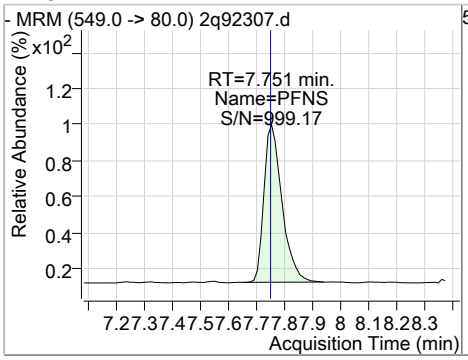


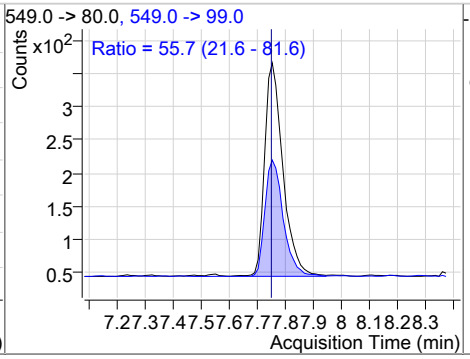


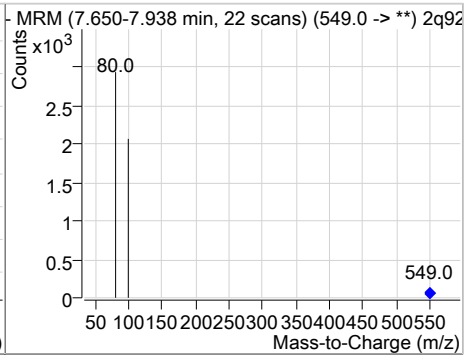




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.11	7.75	0.01	1435	549.0 -> 99.0	55.7	21.6	81.6

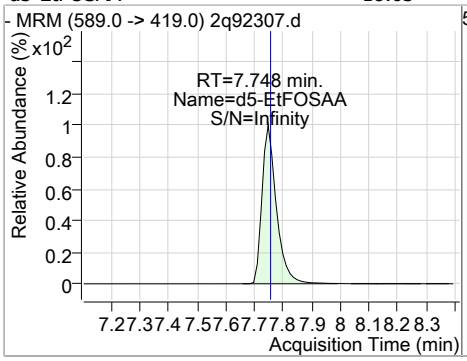


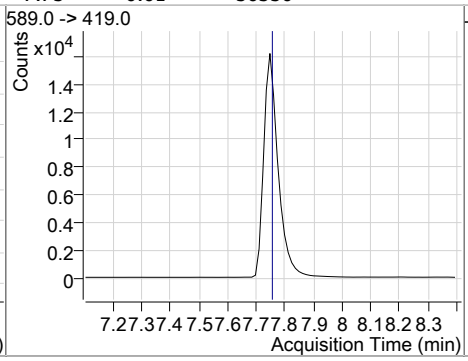


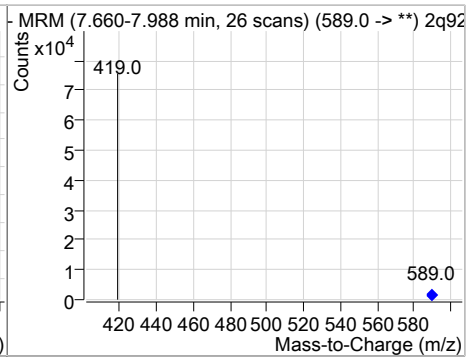


Perfluorinated Compounds by LC/MS/MS

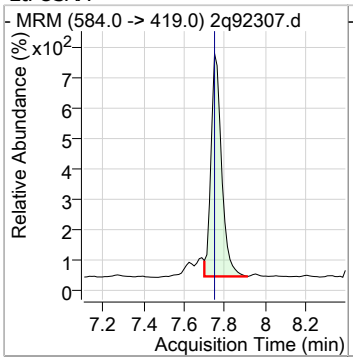
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.63	7.75	-0.01	56556				

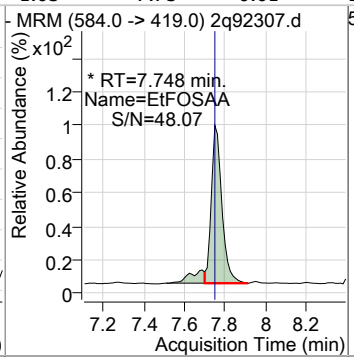


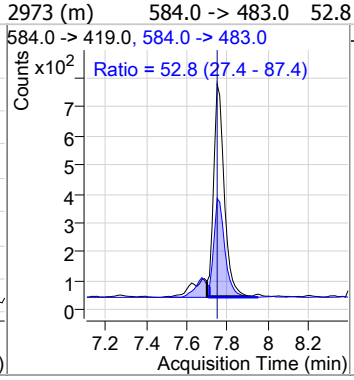


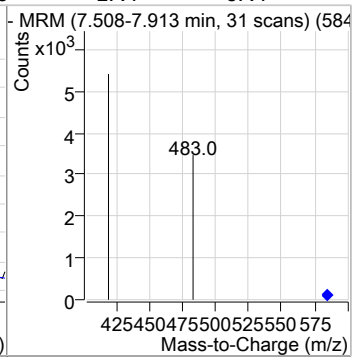


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.05	7.75	-0.01	2973 (m)	584.0 -> 483.0	52.8	27.4	87.4

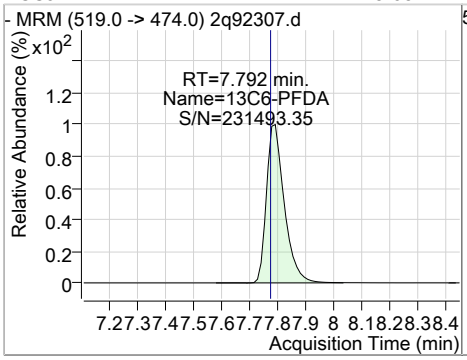


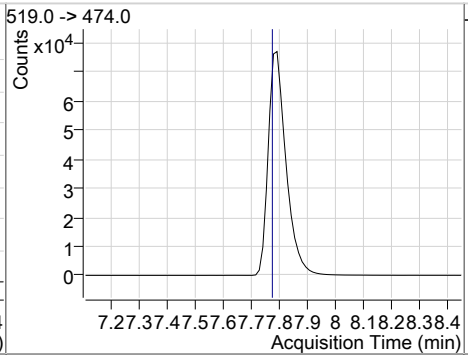


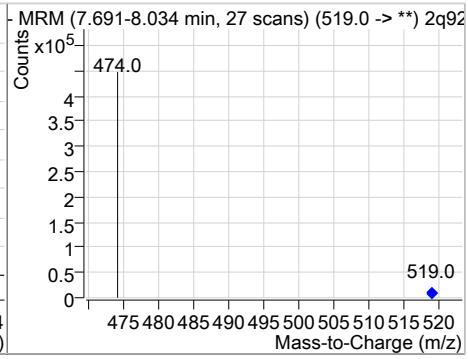




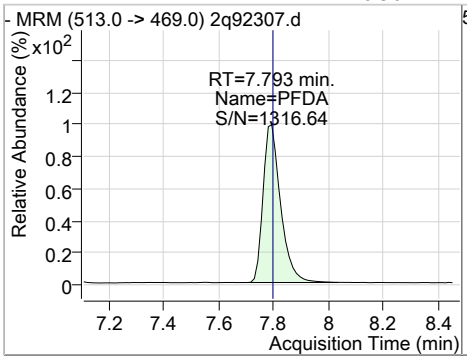
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.68	7.79	0.01	340160				

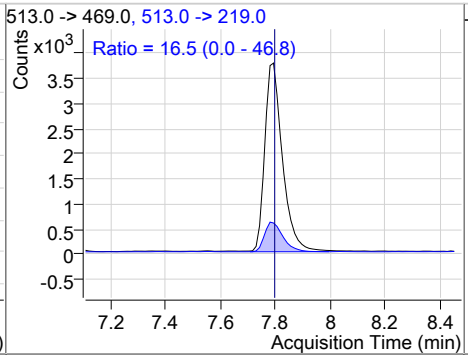


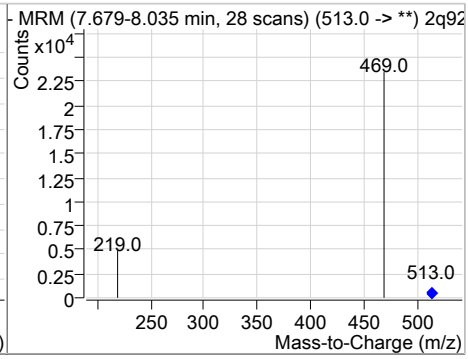




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.96	7.79	0.01	16602	513.0 -> 219.0	16.5	0.0	46.8

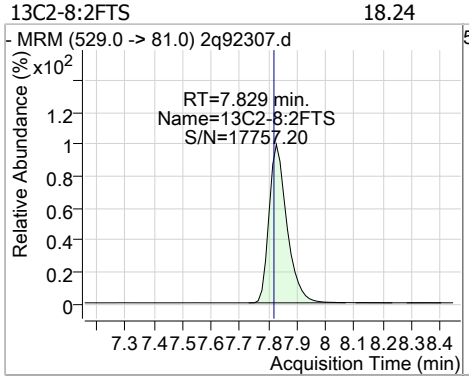


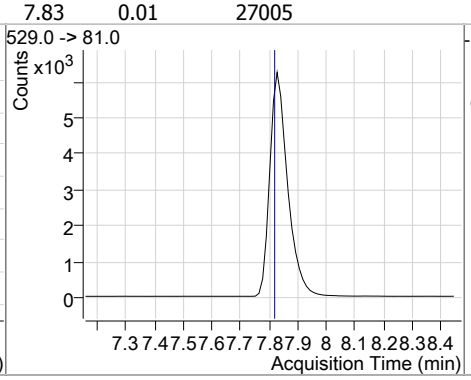


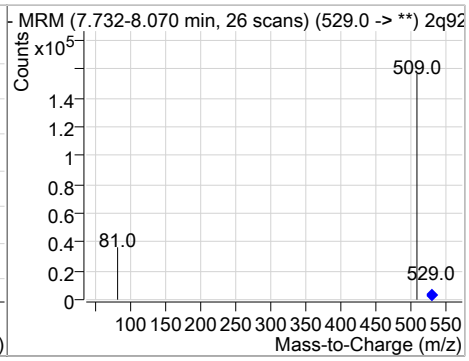


Perfluorinated Compounds by LC/MS/MS

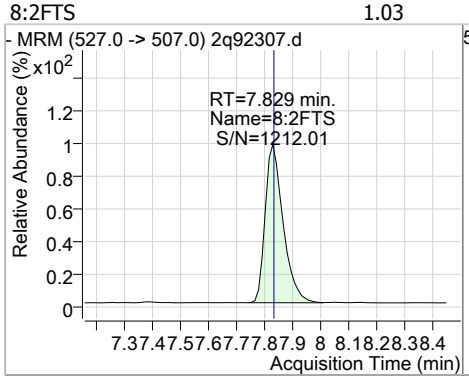
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.24	7.83	0.01	27005				

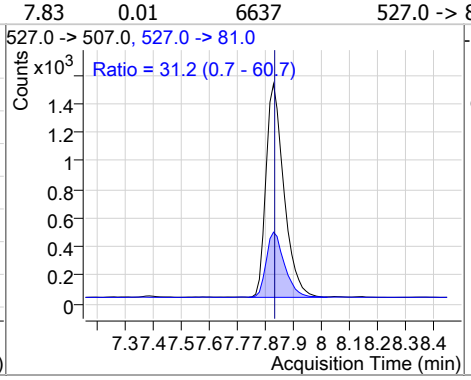


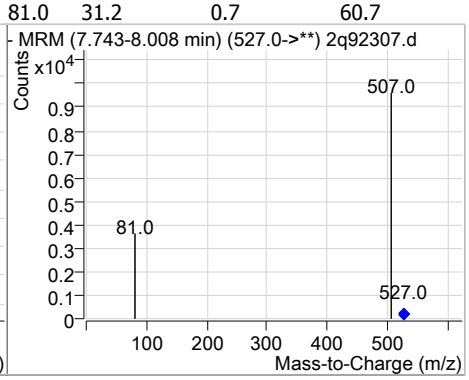




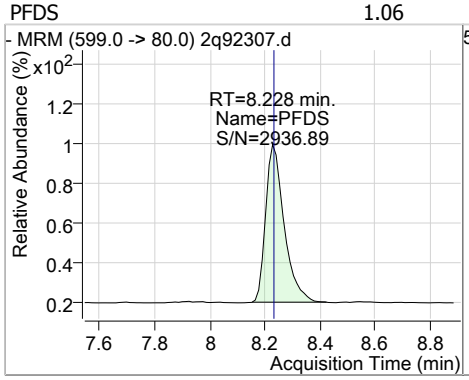
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.03	7.83	0.01	6637	527.0 -> 81.0	31.2	0.7	60.7

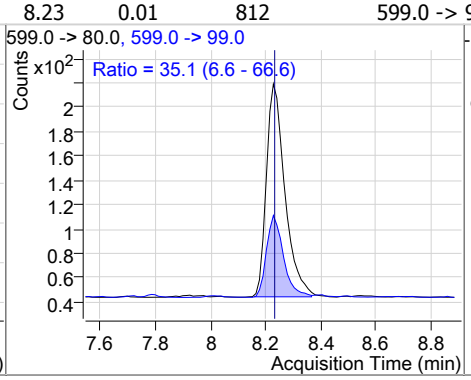


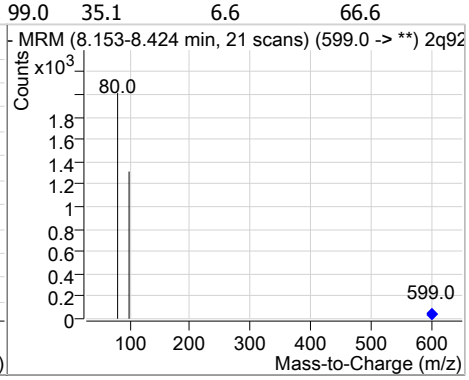




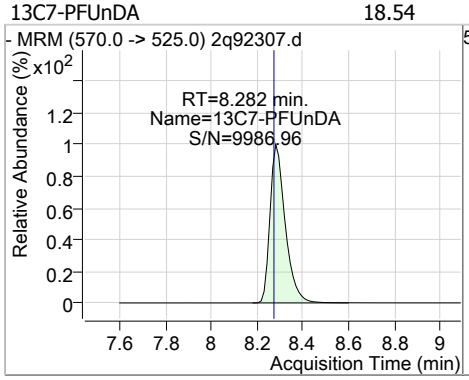
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.06	8.23	0.01	812	599.0 -> 99.0	35.1	6.6	66.6

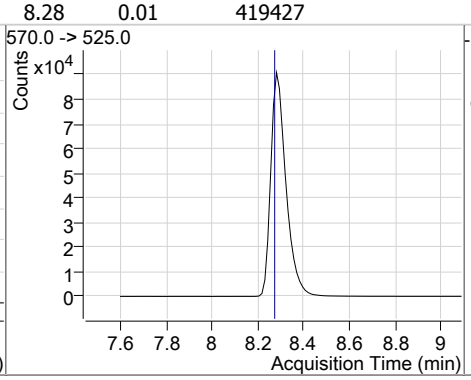


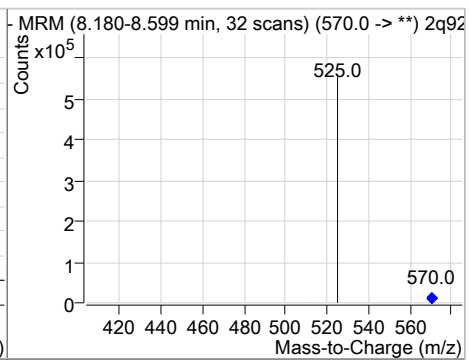




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.54	8.28	0.01	419427				

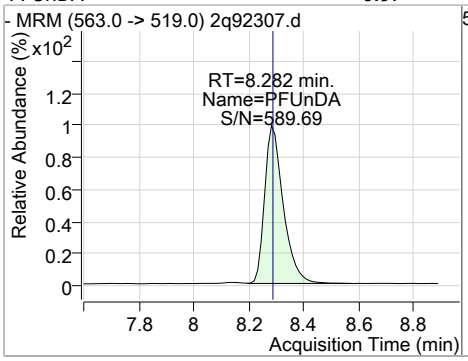


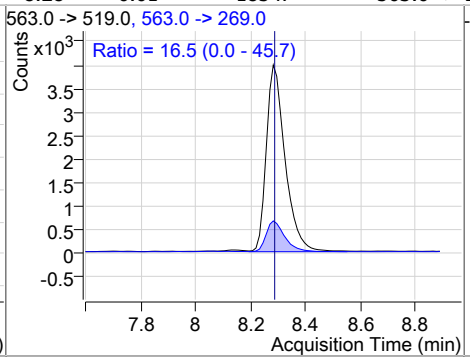


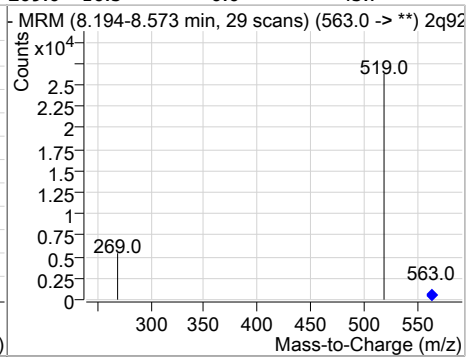


Perfluorinated Compounds by LC/MS/MS

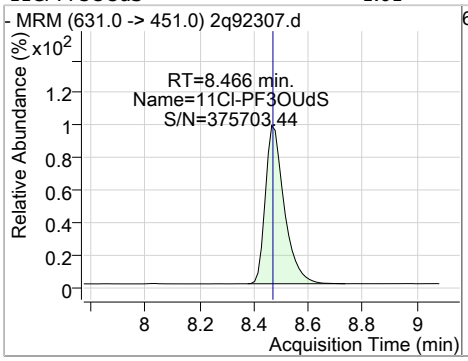
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.97	8.28	0.01	18547	563.0 -> 269.0	16.5	0.0	45.7

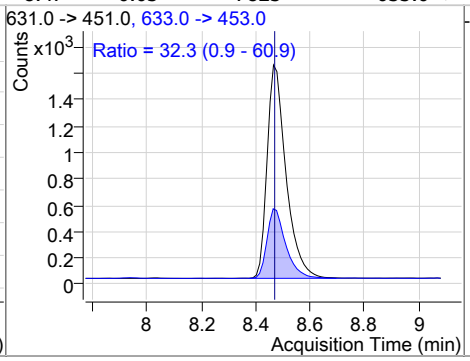


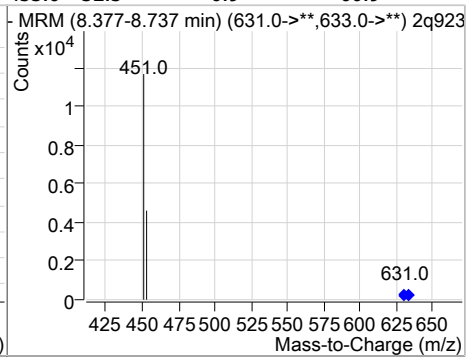




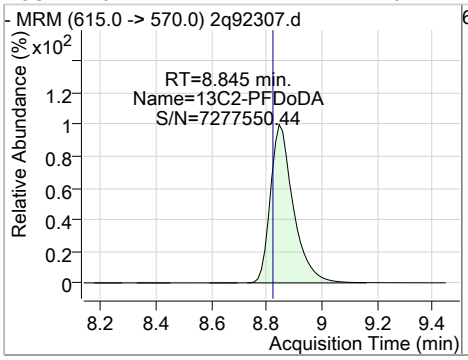
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.01	8.47	0.03	7823	633.0 -> 453.0	32.3	0.9	60.9

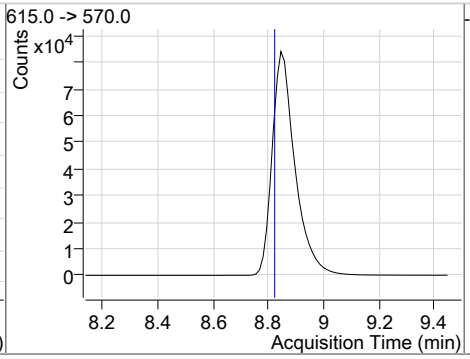


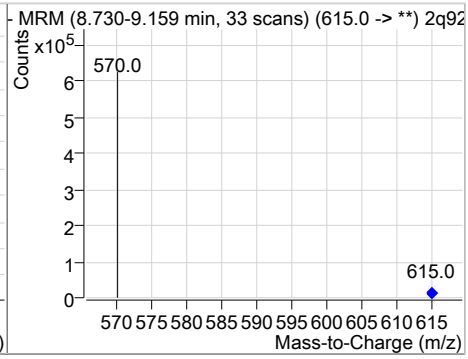




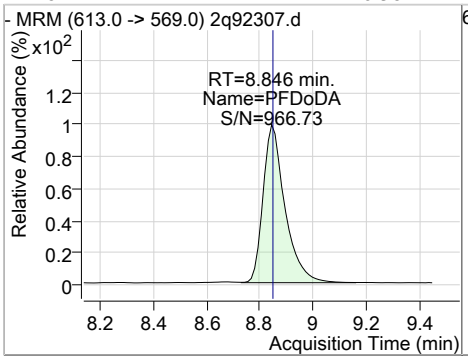
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.84	8.84	0.03	482007				

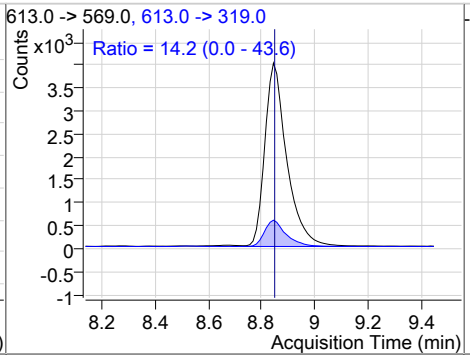


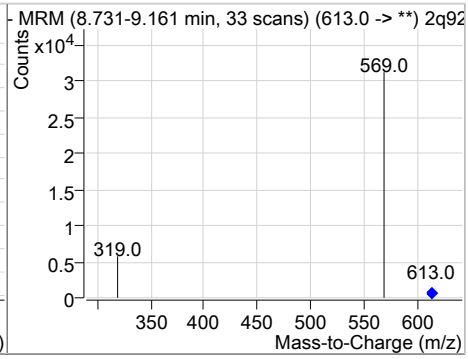




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.98	8.85	0.03	22767	613.0 -> 319.0	14.2	0.0	43.6

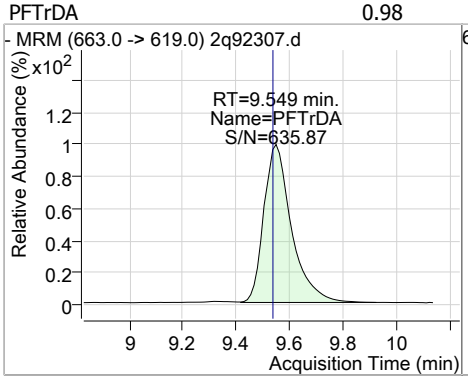


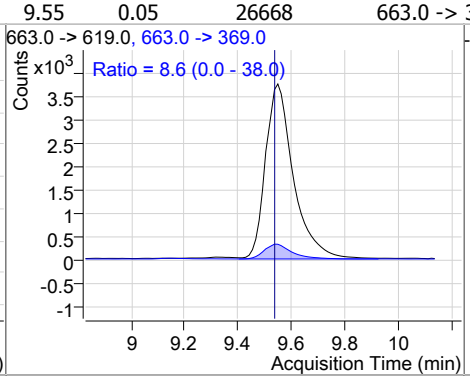


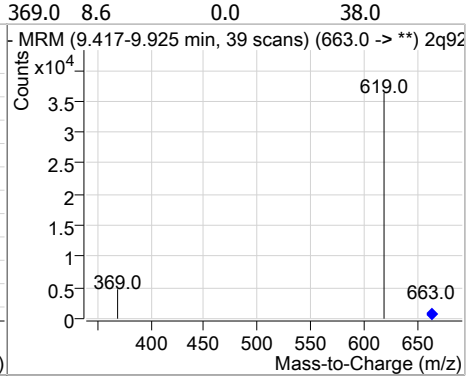


Perfluorinated Compounds by LC/MS/MS

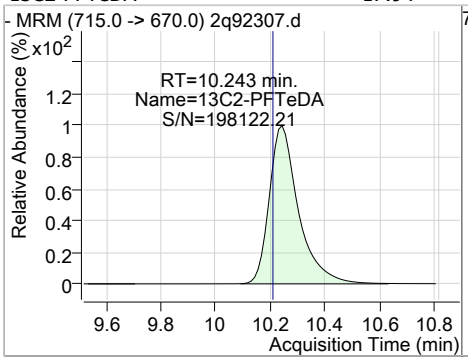
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.98	9.55	0.05	26668	663.0 -> 369.0	8.6	0.0	38.0

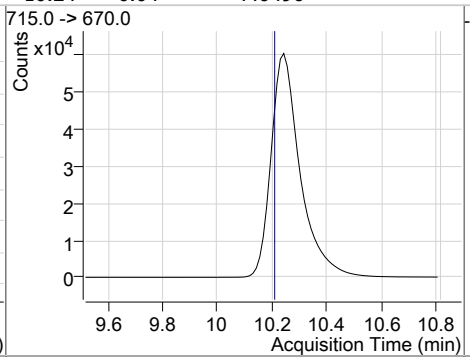


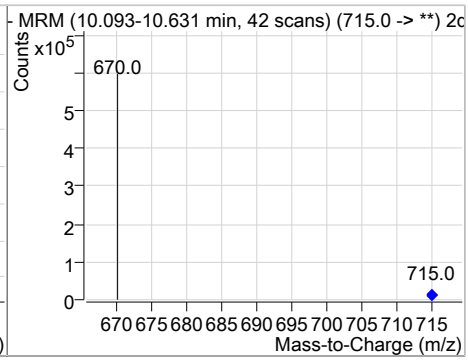




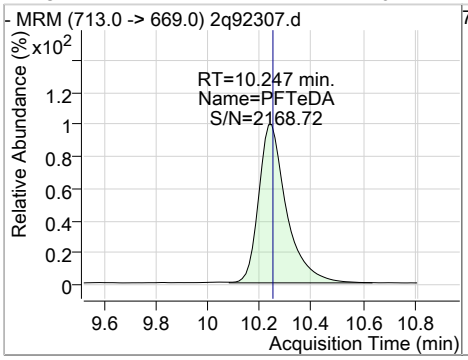
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.94	10.24	0.04	446496				

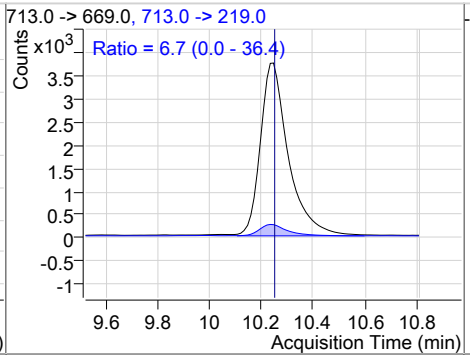


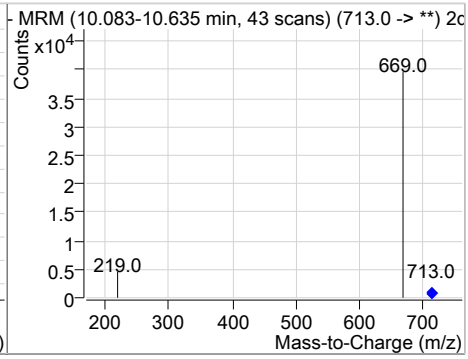




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.02	10.25	0.04	27785	713.0 -> 219.0	6.7	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1293-CC1287
Lab FileID: 2Q92307.D
Injection Time: 06/02/22 15:31
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92318.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 6:57:49 PM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

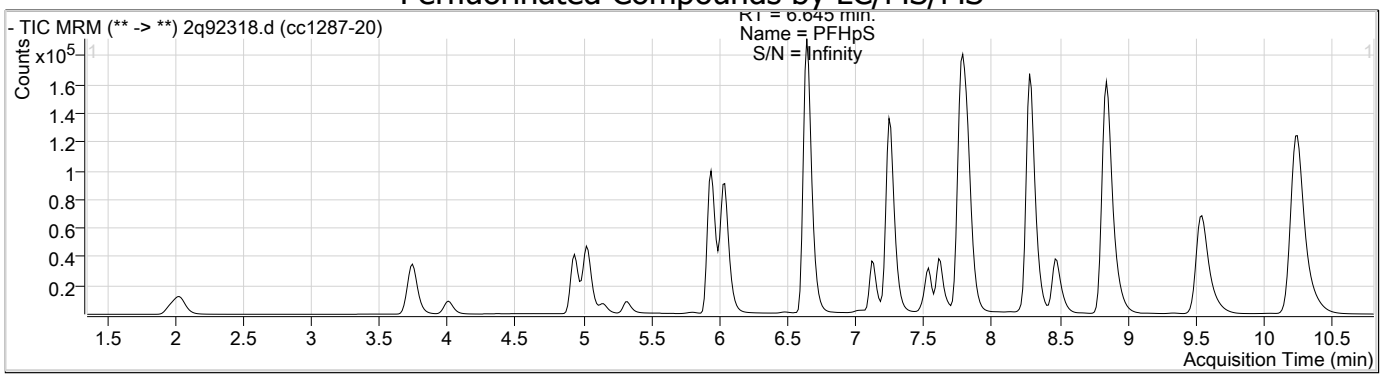
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	55117	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	67272	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	78434	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	118058	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	164125	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	229025	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	259053	20.00	µg/L	0.000
M6-PFDA	7.792	519.0 -> 474.0	320384	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	404841	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	483181	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	436307	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	67582	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	8955	20.00	µg/L	0.000
M3-PFHxS	5.979	402.0 -> 99.0	13267	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	18635	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	8380	20.00	µg/L	0.000
M2-6:2FTS	6.646	429.0 -> 81.0	18138	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	26198	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	66497	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4427	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	22972	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8380	18.01	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%		
13C2-6:2FTS	6.646	429.0 -> 81.0	18138	17.54	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%		
13C2-8:2FTS	7.828	529.0 -> 81.0	26198	17.69	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.5%		
13C2-PFDoDA	8.845	615.0 -> 570.0	483181	17.89	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%		
13C2-PFTeDA	10.243	715.0 -> 670.0	436307	17.53	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.6%		
13C3-PFBS	4.004	302.0 -> 99.0	8955	17.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.0%		
13C3-PFHxS	5.979	402.0 -> 99.0	13267	18.61	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C4-PFBA	2.027	217.0 -> 172.0	67272	17.41	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.1%		
13C4-PFHpA	5.941	367.0 -> 322.0	164125	17.68	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.4%		
d5-EtFOSAA	7.748	589.0 -> 419.0	55117	18.16	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.8%		
13C5-PFHxA	5.027	318.0 -> 273.0	118058	17.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.4%		
13C5-PFPeA	3.749	268.0 -> 223.0	78434	17.21	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

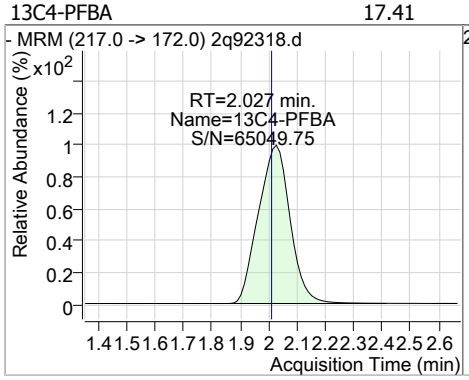
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.0%			
13C6-PFDA	7.792	519.0 -> 474.0	320384	17.59	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%			
13C7-PFUnDA	8.282	570.0 -> 525.0	404841	17.89	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%			
13C8-FOSA	7.124	506.0 -> 78.0	67582	18.36	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%			
13C8-PFOA	6.649	421.0 -> 376.0	229025	17.79	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%			
13C8-PFOS	7.237	507.0 -> 99.0	18635	17.96	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%			
13C9-PFNA	7.252	472.0 -> 427.0	259053	17.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%			
d3-MeFOSAA	7.610	573.0 -> 419.0	66497	17.34	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4427	17.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.0%			
d3-MeFOSA	7.539	515.0 -> 169.0	22972	16.41	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	73428	16.72	µg/L		98
6:2FTS	6.647	427.0 -> 407.0	116907	17.48	µg/L		99
8:2FTS	7.829	527.0 -> 507.0	107525	17.23	µg/L		99
EtFOSAA	7.748	584.0 -> 419.0	45737	16.66	µg/L	m	95
FOSA	7.125	498.0 -> 78.0	60512	17.05	µg/L		100
MeFOSAA	7.623	570.0 -> 419.0	54625	17.88	µg/L	m	99
PFBA	2.021	213.0 -> 169.0	29253	16.96	µg/L		100
PFBS	4.007	299.0 -> 80.0	26002	17.42	µg/L		99
PFDA	7.793	513.0 -> 469.0	281726	17.35	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	392901	16.95	µg/L		100
PFDS	8.228	599.0 -> 80.0	13169	17.83	µg/L		99
PFHpA	5.943	363.0 -> 319.0	233071	17.37	µg/L		100
PFHpS	6.645	449.0 -> 80.0	26847	17.22	µg/L		99
PFHxA	5.028	313.0 -> 269.0	75399	17.26	µg/L		99
PFHxS	5.967	399.0 -> 80.0	28819	17.31	µg/L	m	94
PFNA	7.252	463.0 -> 419.0	247940	17.21	µg/L		99
PFNS	7.751	549.0 -> 80.0	23145	17.63	µg/L		98
PFOA	6.649	413.0 -> 369.0	214262	17.23	µg/L		99
PFOS	7.238	499.0 -> 80.0	28635	17.55	µg/L	m	98
PFPeA	3.751	263.0 -> 219.0	107737	17.84	µg/L		100
PFPeS	5.145	349.0 -> 80.0	18372	17.99	µg/L		99
PFTeDA	10.235	713.0 -> 669.0	472097	17.77	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	456984	16.84	µg/L		99
PFUnDA	8.282	563.0 -> 519.0	316302	17.06	µg/L		99
11Cl-PF3OUdS	8.466	631.0 -> 451.0	136833	17.57	µg/L		100
9Cl-PF3ONS	7.511	531.0 -> 351.0	28681	16.52	µg/L		98
ADONA	6.044	377.0 -> 251.0	287989	16.73	µg/L		100
HFPO-DA	5.326	329.0 -> 169.0	28371	17.77	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	17756	18.33	µg/L		100

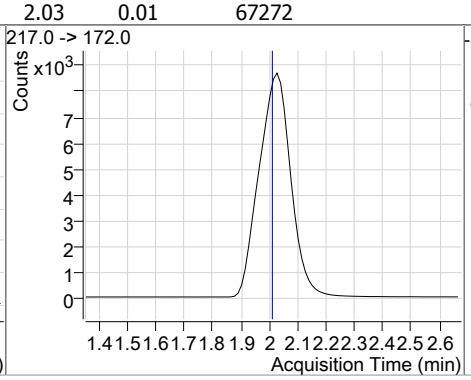
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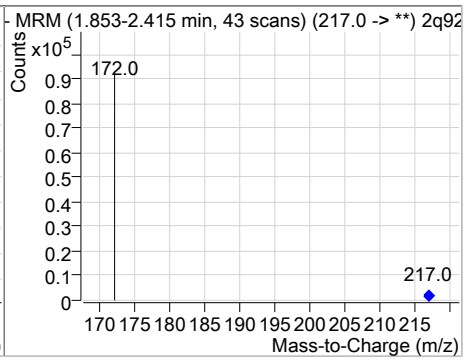
Perfluorinated Compounds by LC/MS/MS



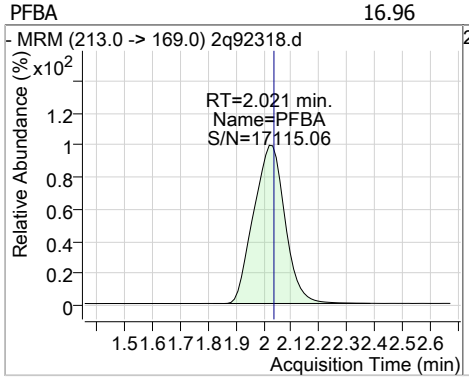
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.41	2.03	0.01	67272				

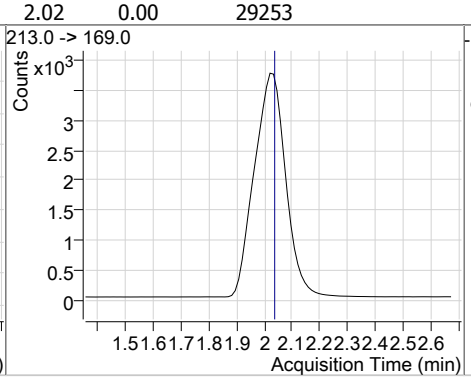


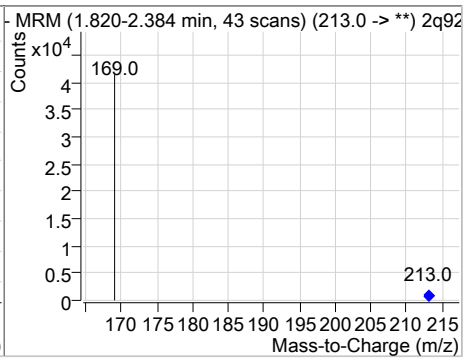




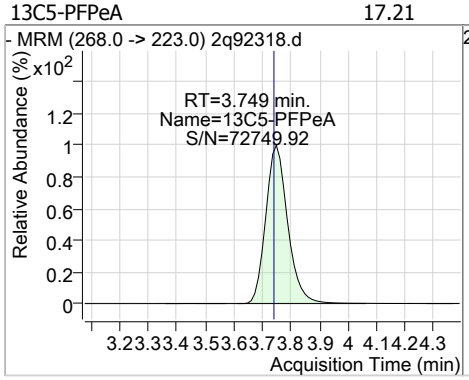
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PFBA	16.96	2.02	0.00	29253				

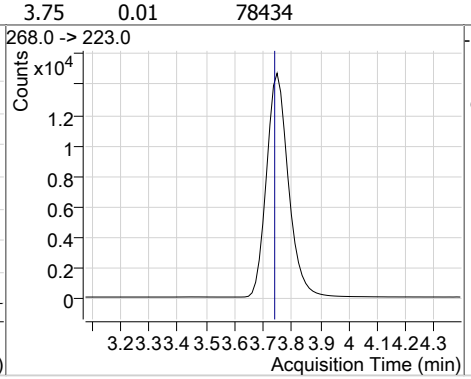


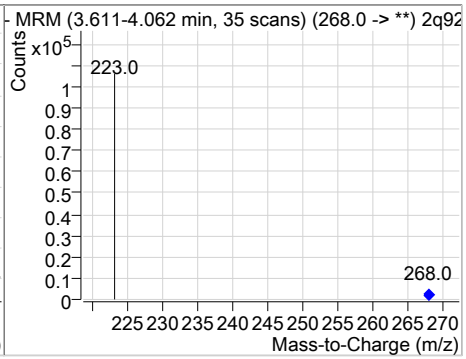




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.21	3.75	0.01	78434				

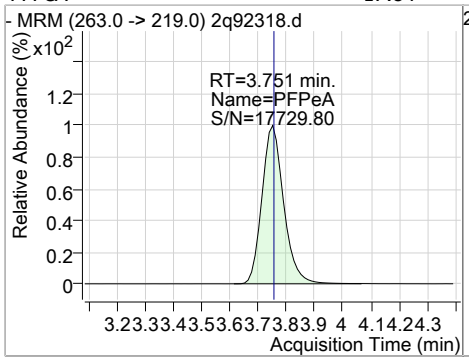


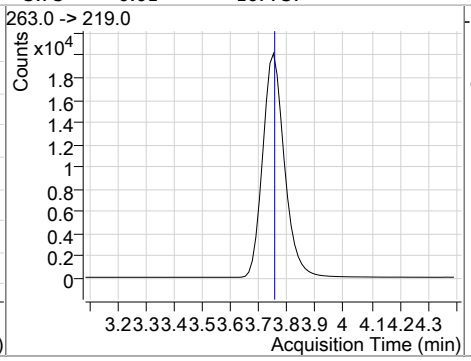


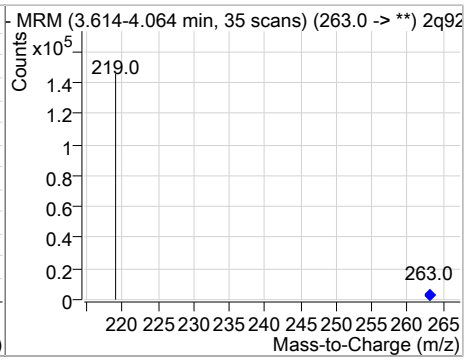


Perfluorinated Compounds by LC/MS/MS

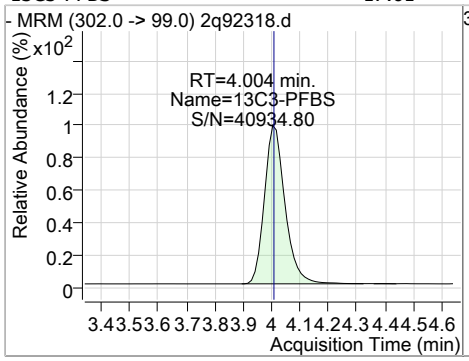
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.84	3.75	0.01	107737				

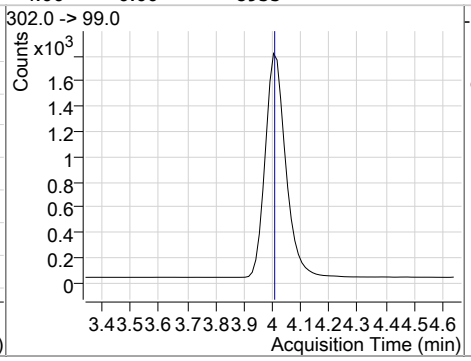


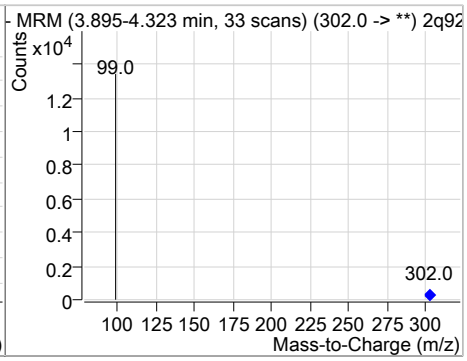




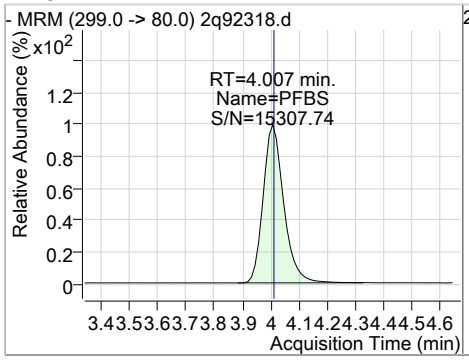
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.61	4.00	0.00	8955				

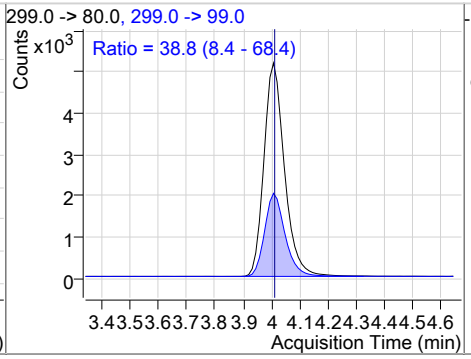


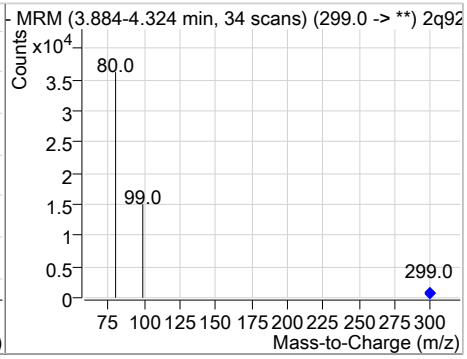




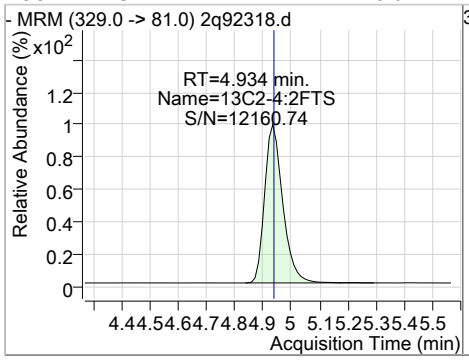
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.42	4.01	0.00	26002	299.0 -> 99.0	38.8	8.4	68.4

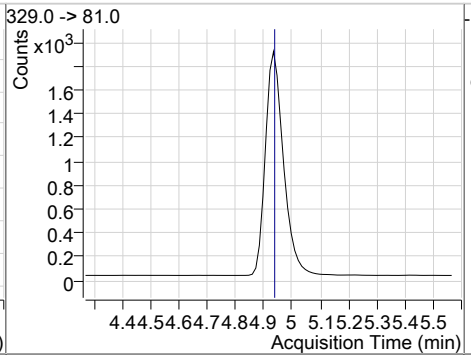


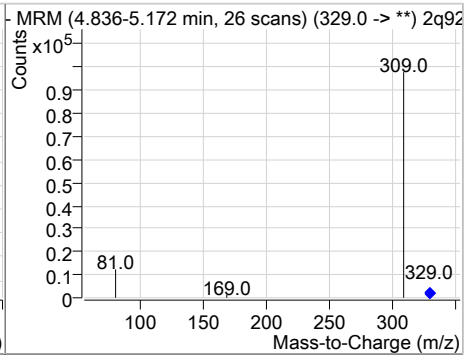




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.01	4.93	0.00	8380				

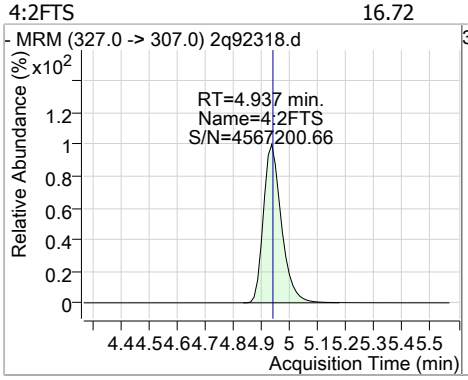


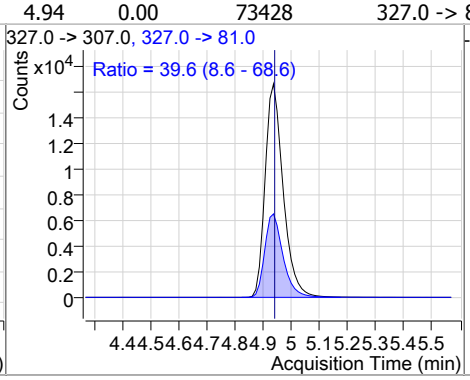


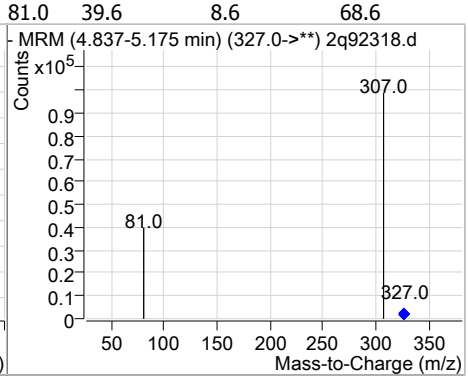


Perfluorinated Compounds by LC/MS/MS

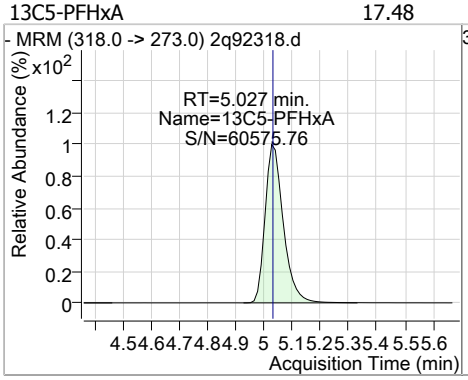
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.72	4.94	0.00	73428	327.0 -> 81.0	39.6	8.6	68.6

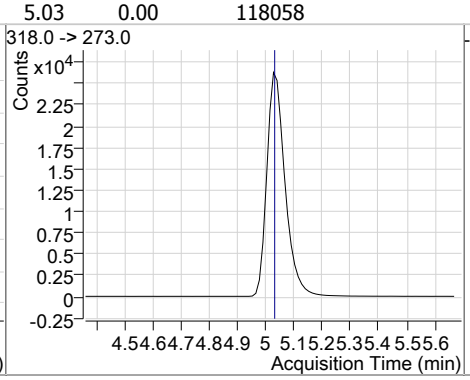


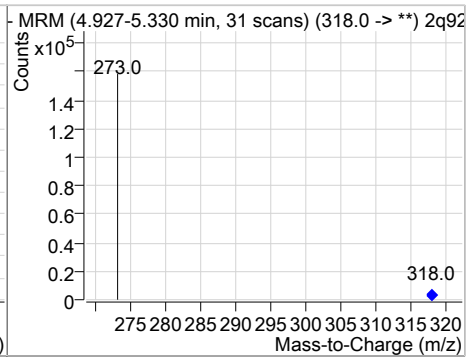




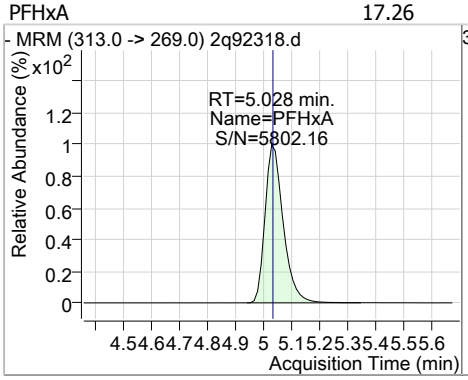
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.48	5.03	0.00	118058				

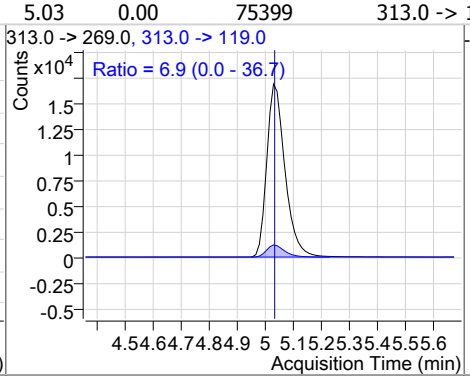


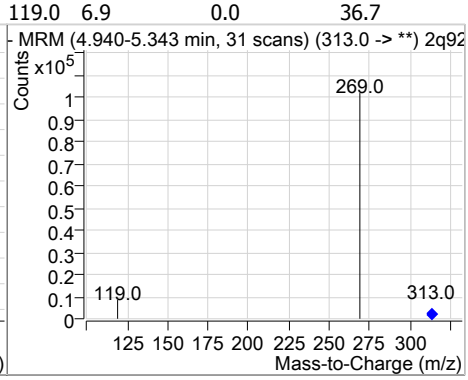




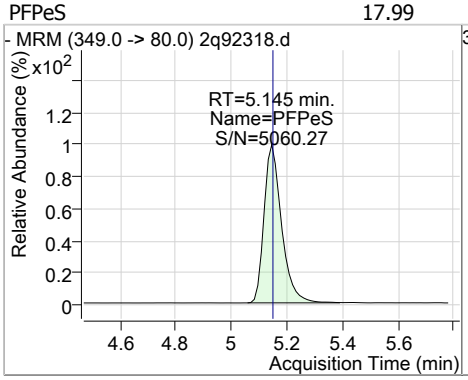
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.26	5.03	0.00	75399	313.0 -> 119.0	6.9	0.0	36.7

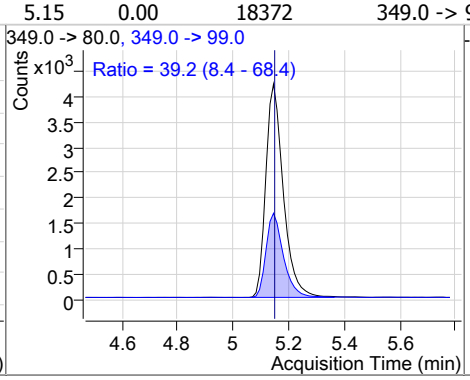


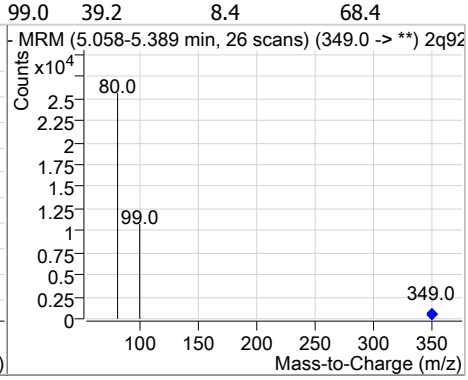




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.99	5.15	0.00	18372	349.0 -> 99.0	39.2	8.4	68.4

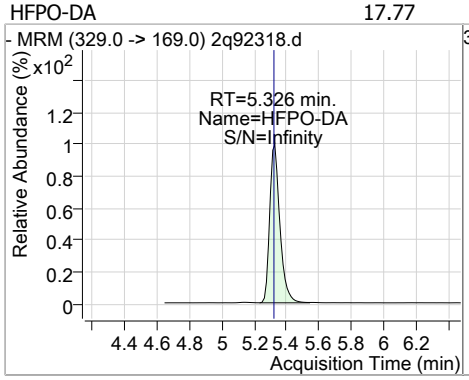


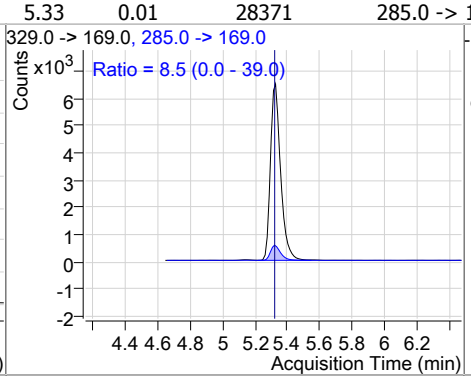


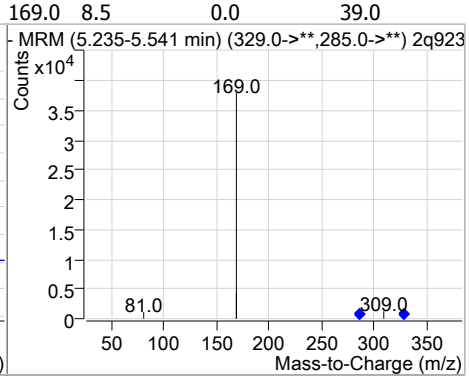


Perfluorinated Compounds by LC/MS/MS

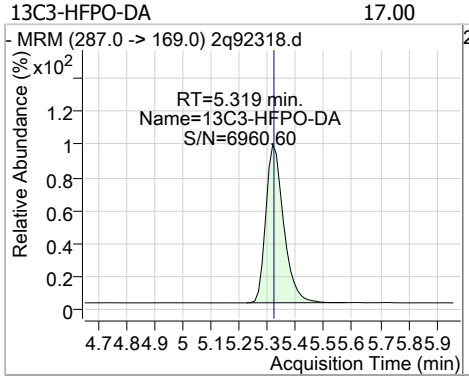
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	17.77	5.33	0.01	28371	285.0 -> 169.0	8.5	0.0	39.0

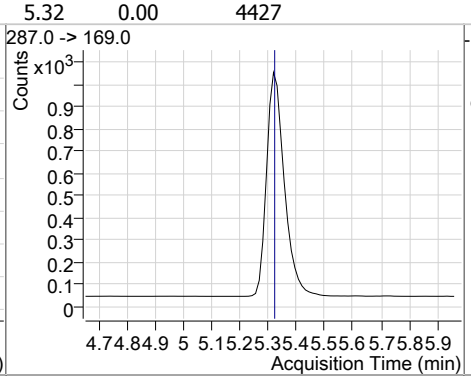


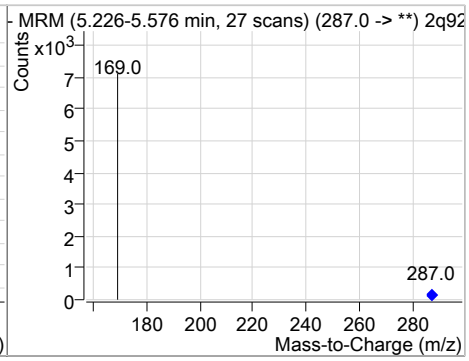




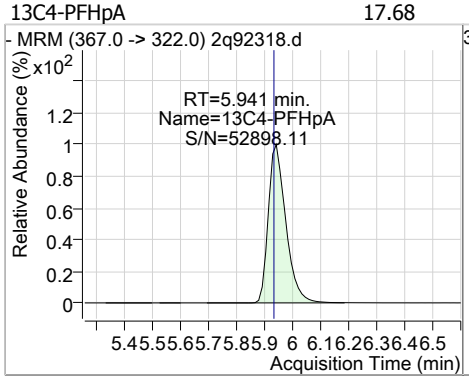
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	17.00	5.32	0.00	4427				

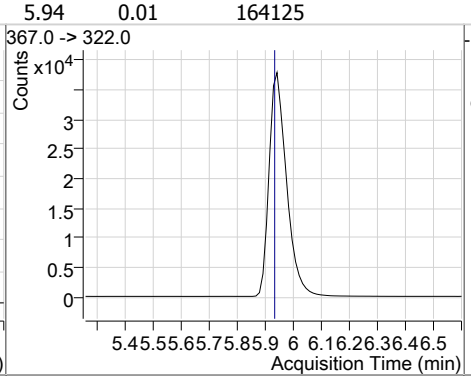


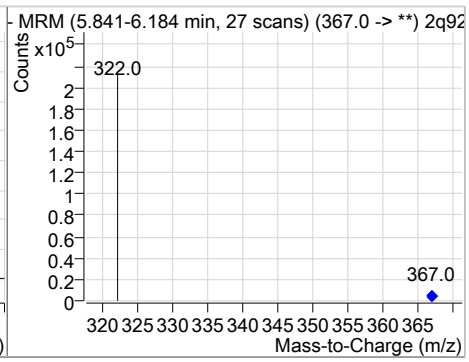




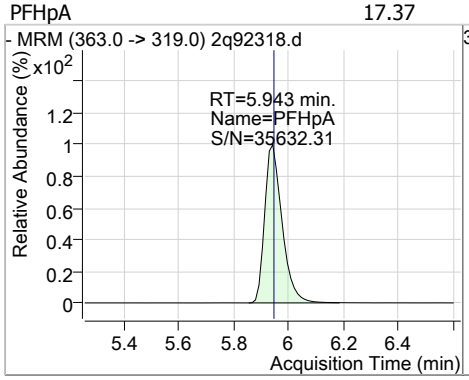
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.68	5.94	0.01	164125				

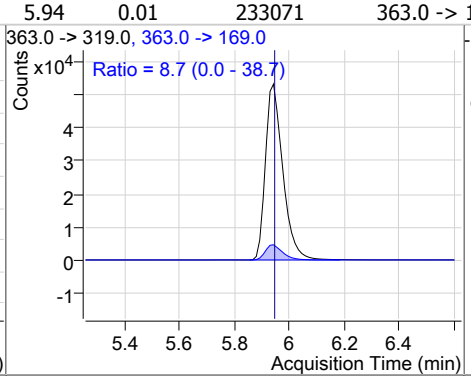


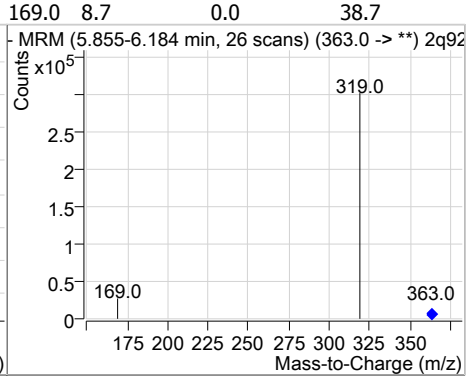




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.37	5.94	0.01	233071	363.0 -> 169.0	8.7	0.0	38.7

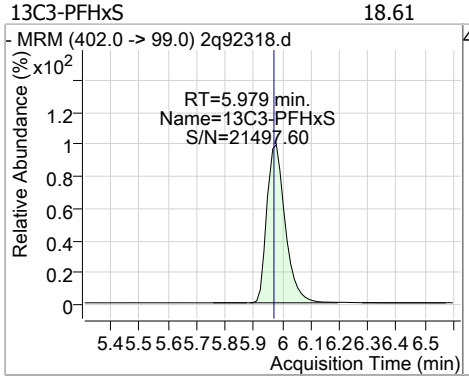


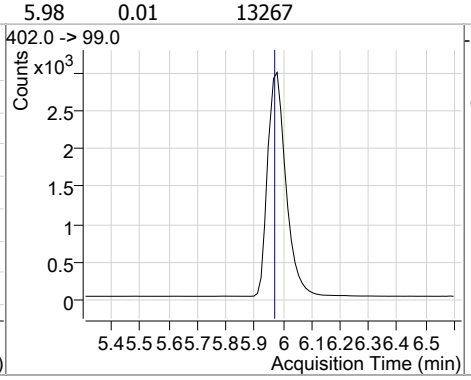


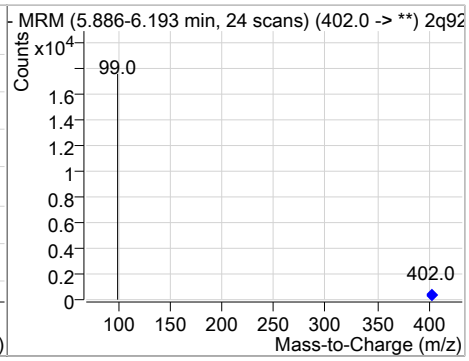


Perfluorinated Compounds by LC/MS/MS

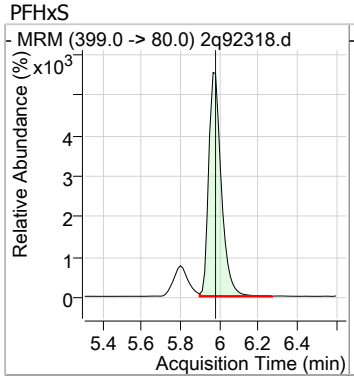
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.61	5.98	0.01	13267				

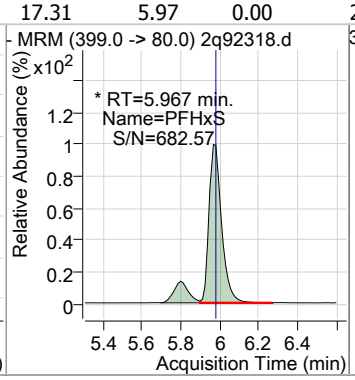


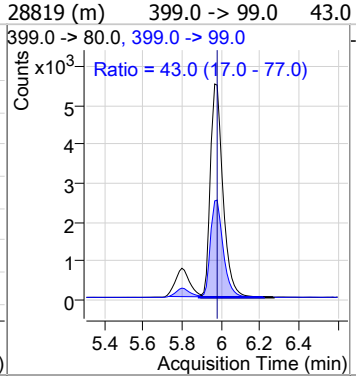


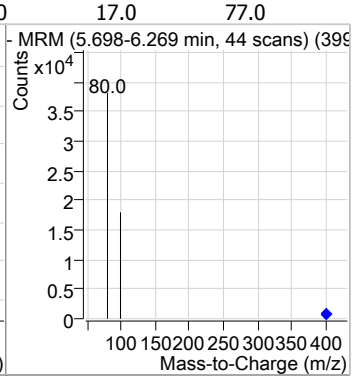


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.31	5.97	0.00	28819 (m)	399.0 -> 99.0	43.0	17.0	77.0

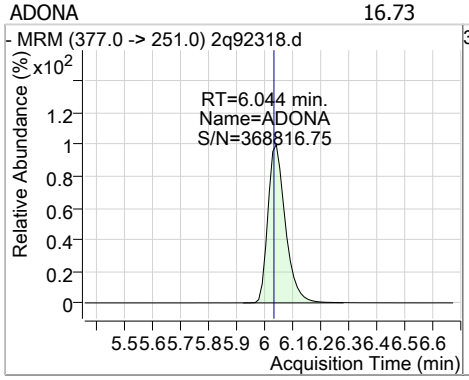


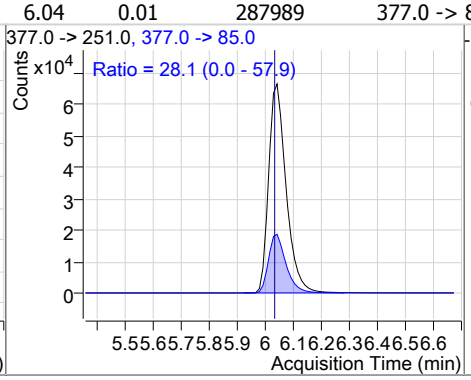


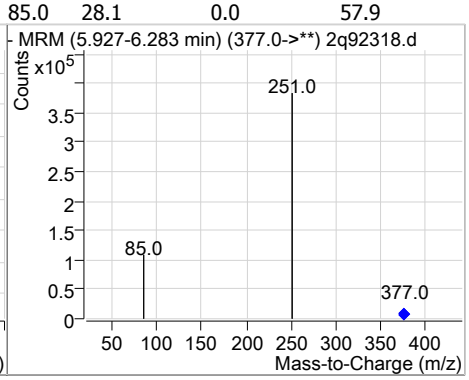




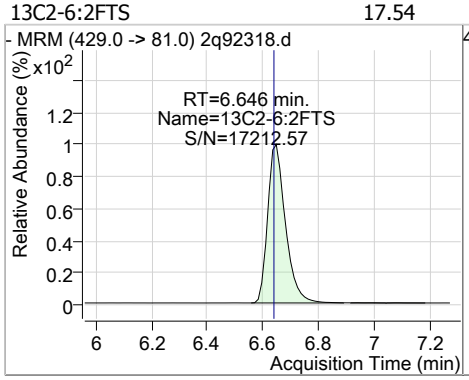
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	16.73	6.04	0.01	287989	377.0 -> 85.0	28.1	0.0	57.9

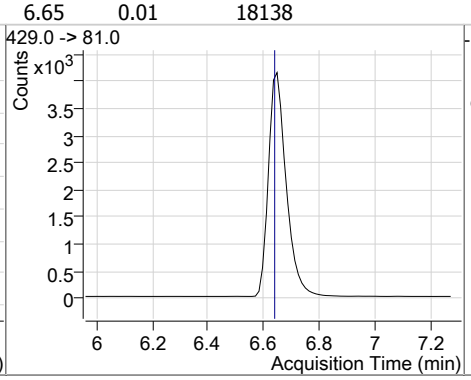


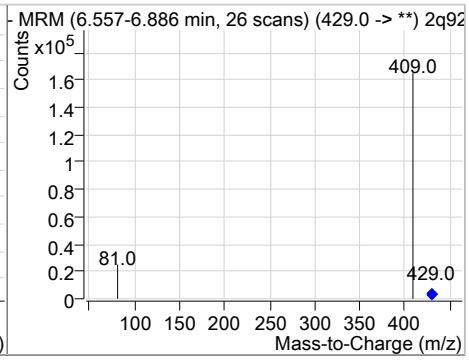




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.54	6.65	0.01	18138				

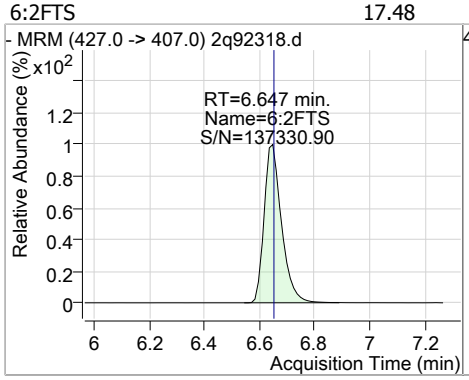


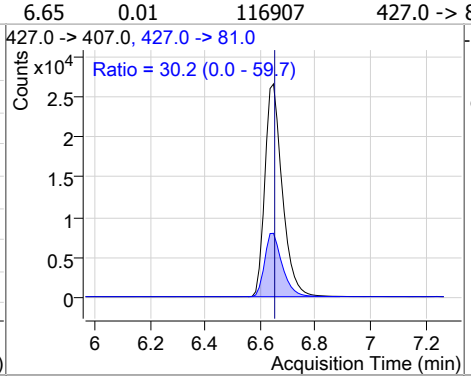


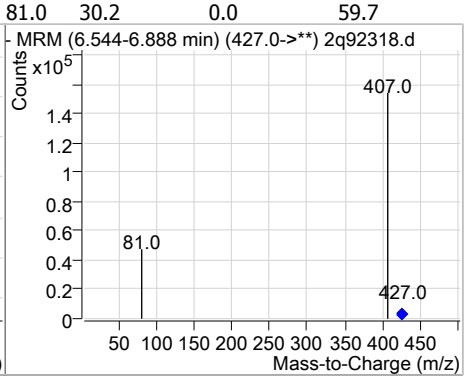


Perfluorinated Compounds by LC/MS/MS

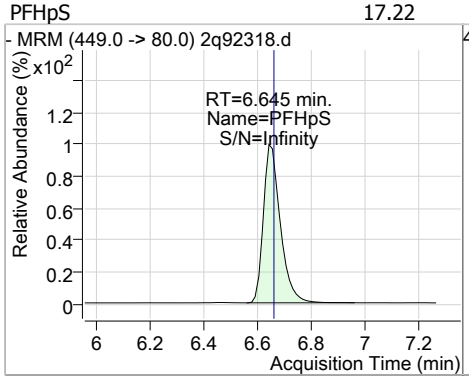
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.48	6.65	0.01	116907	427.0 -> 81.0	30.2	0.0	59.7

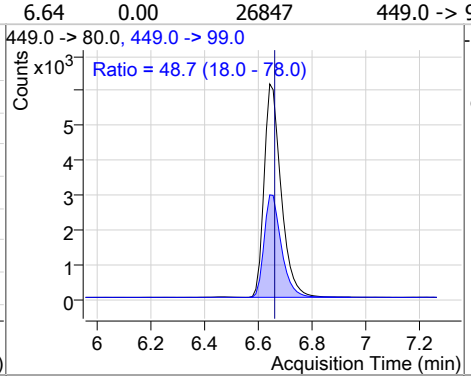


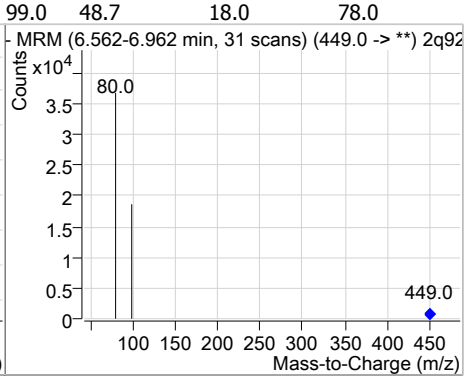




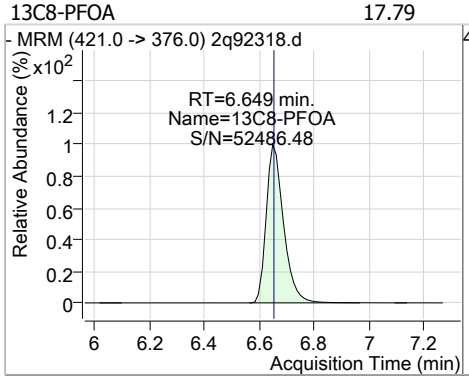
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.22	6.64	0.00	26847	449.0 -> 99.0	48.7	18.0	78.0

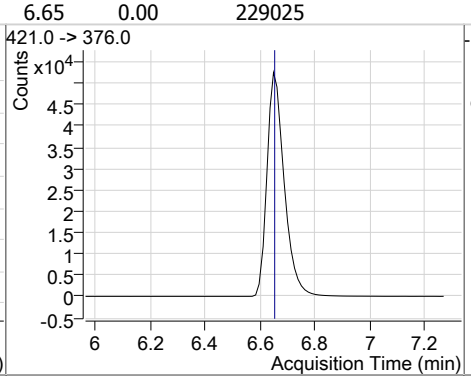


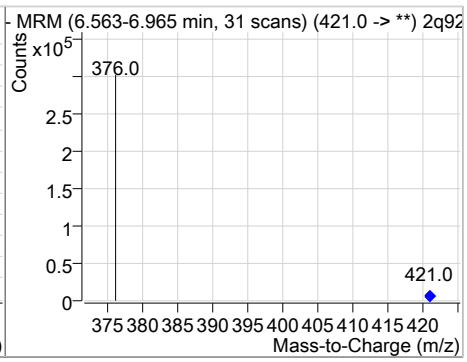




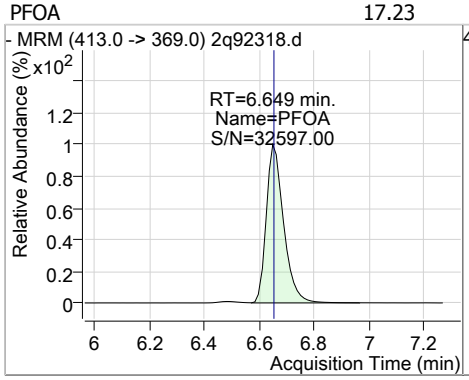
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.79	6.65	0.00	229025				

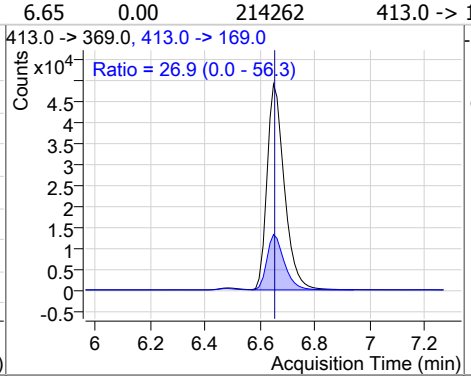


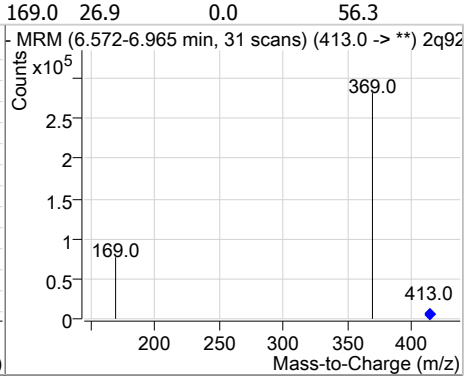




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.23	6.65	0.00	214262	413.0 -> 169.0	26.9	0.0	56.3

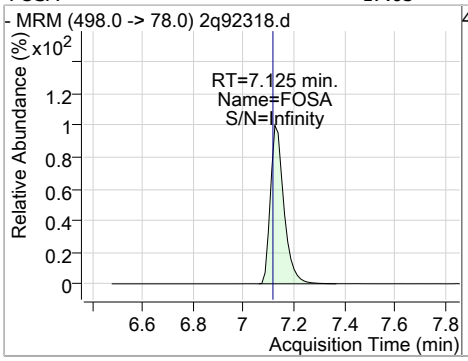


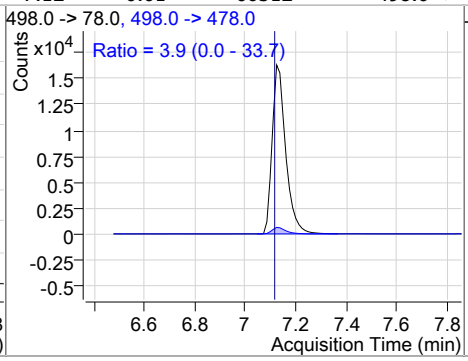


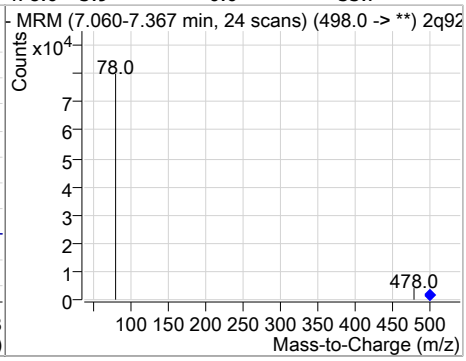


Perfluorinated Compounds by LC/MS/MS

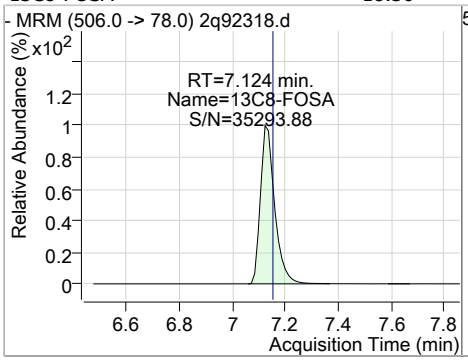
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.05	7.12	-0.01	60512	498.0 -> 478.0	3.9	0.0	33.7

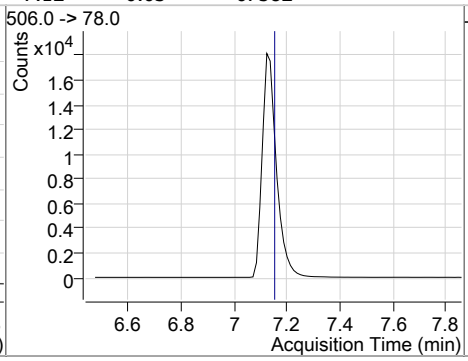


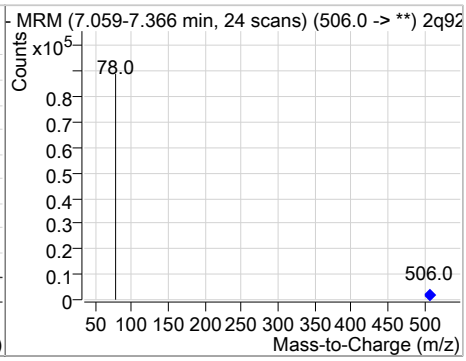




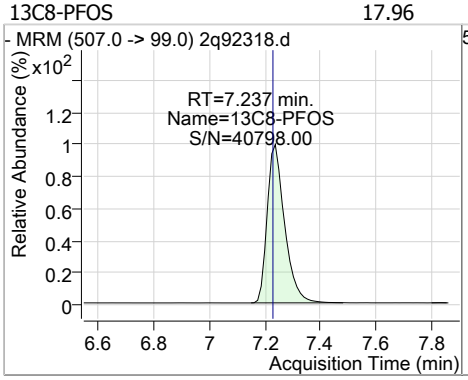
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.36	7.12	-0.03	67582				

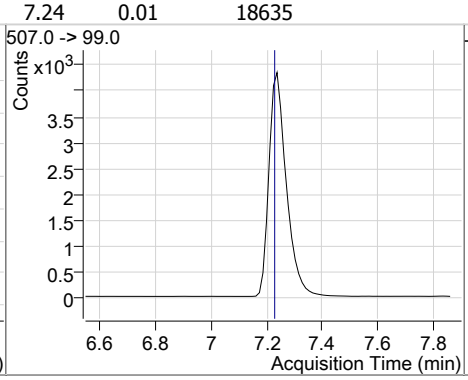


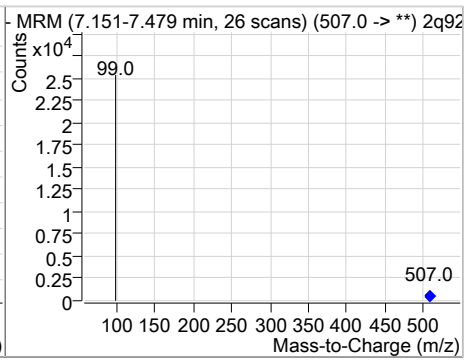




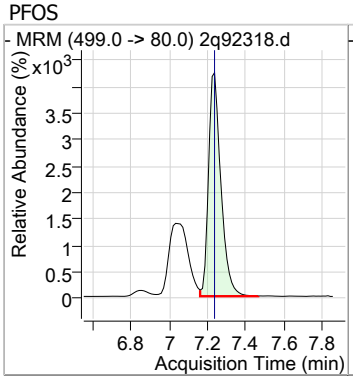
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.96	7.24	0.01	18635				

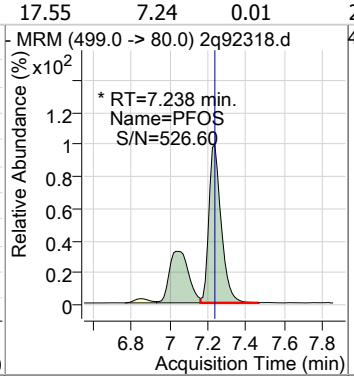


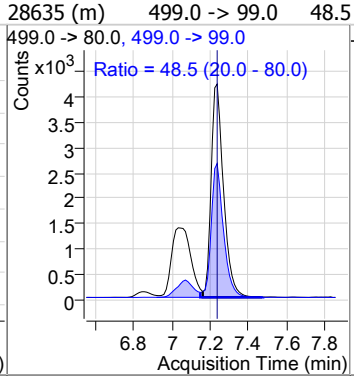


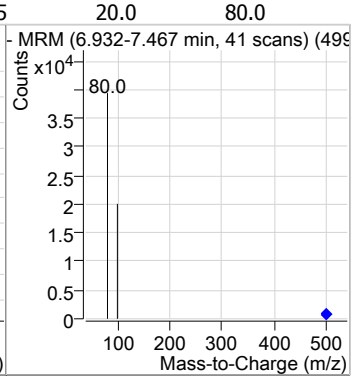


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.55	7.24	0.01	28635 (m)	499.0 -> 99.0	48.5	20.0	80.0



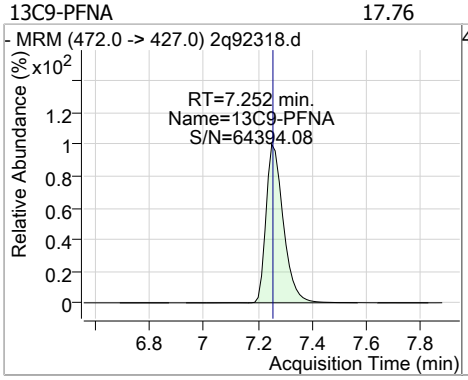


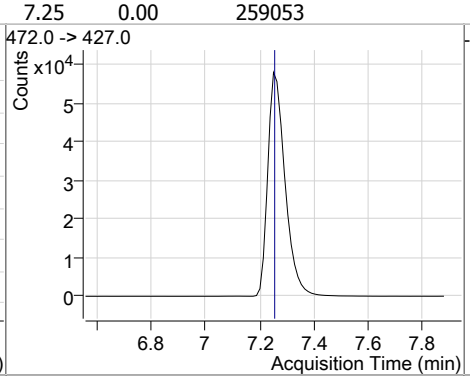


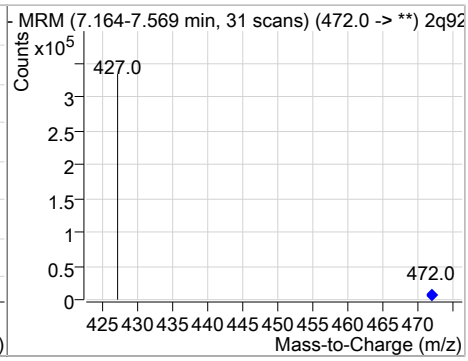


Perfluorinated Compounds by LC/MS/MS

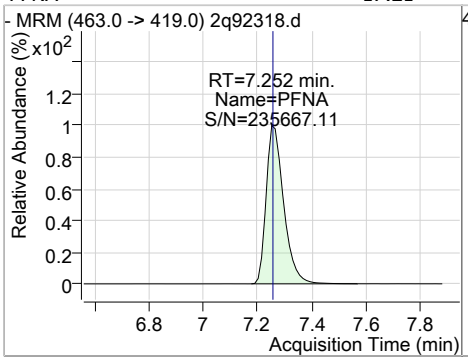
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.76	7.25	0.00	259053				

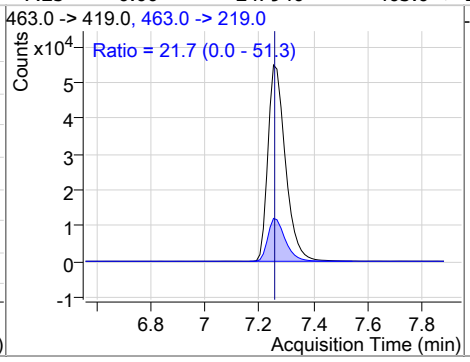


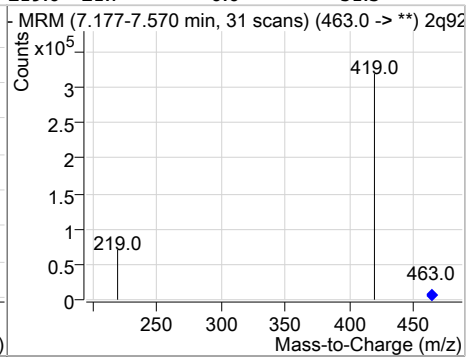




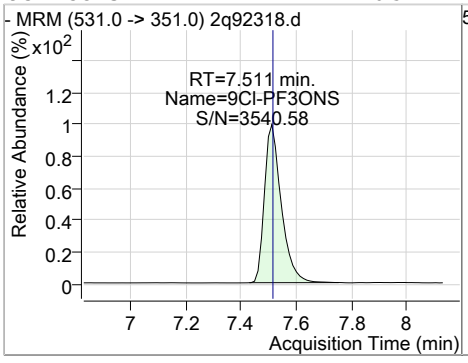
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.21	7.25	0.00	247940	463.0 -> 219.0	21.7	0.0	51.3

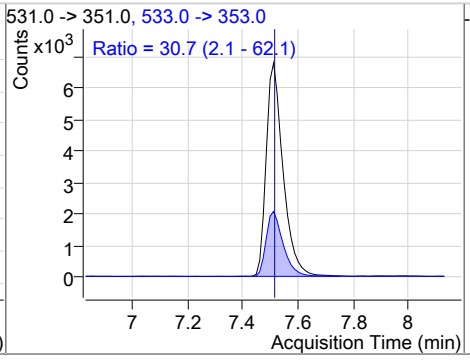


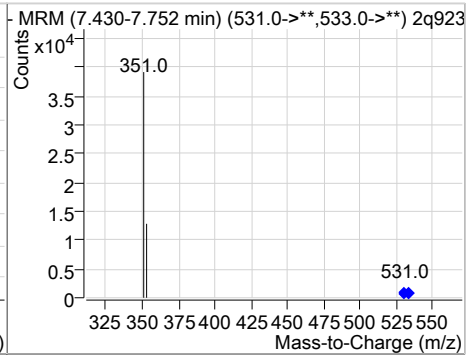




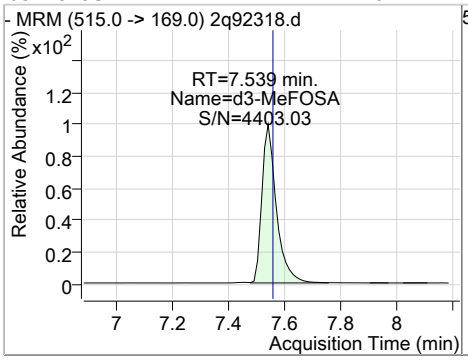
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.52	7.51	0.01	28681	533.0 -> 353.0	30.7	2.1	62.1

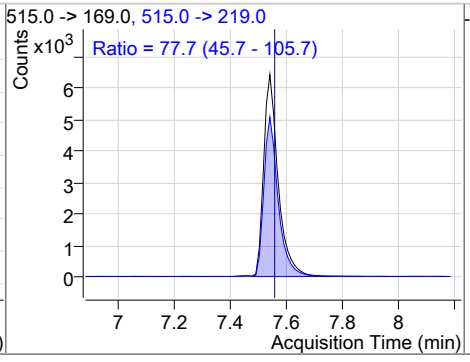


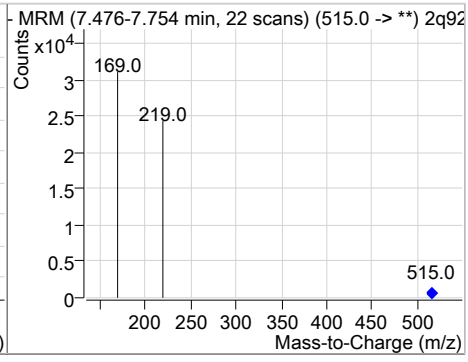




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	16.41	7.54	-0.01	22972	515.0 -> 219.0	77.7	45.7	105.7

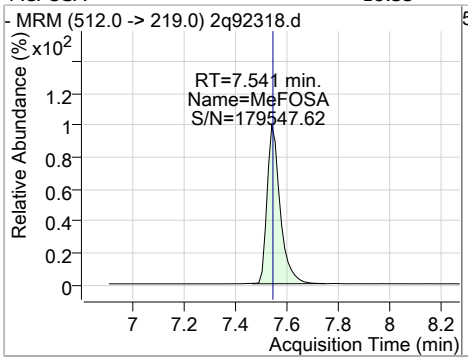


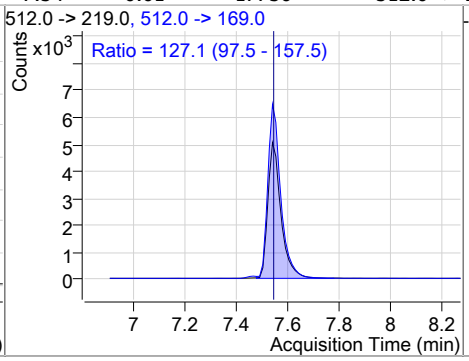


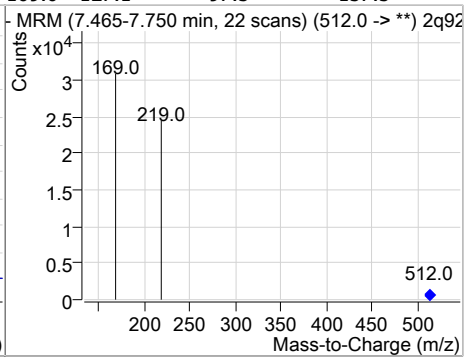


Perfluorinated Compounds by LC/MS/MS

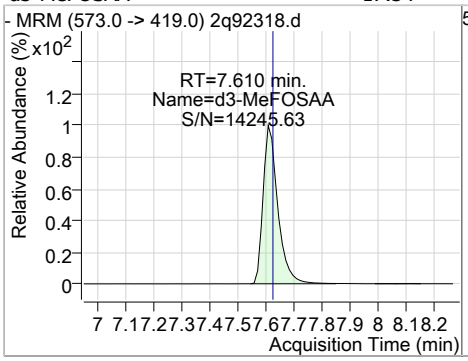
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.33	7.54	-0.01	17756	512.0 -> 169.0	127.1	97.5	157.5

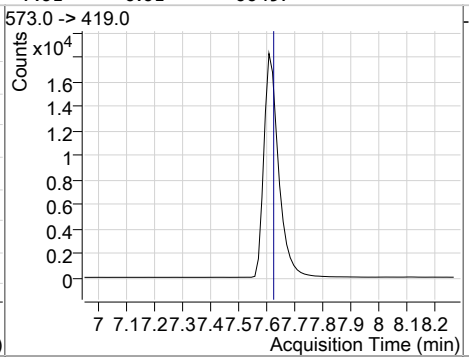


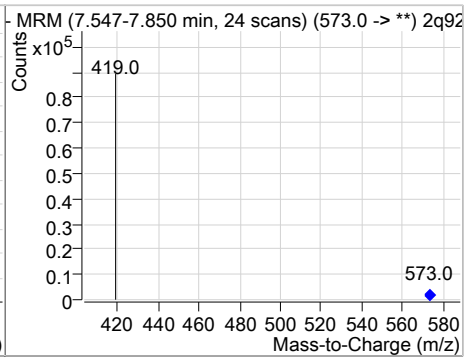




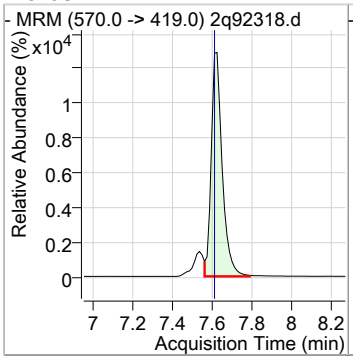
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.34	7.61	-0.01	66497				

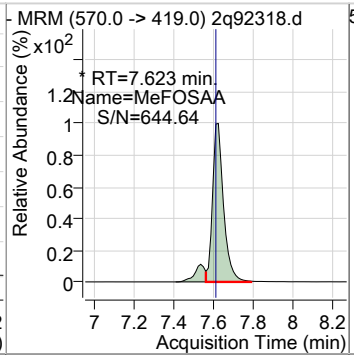


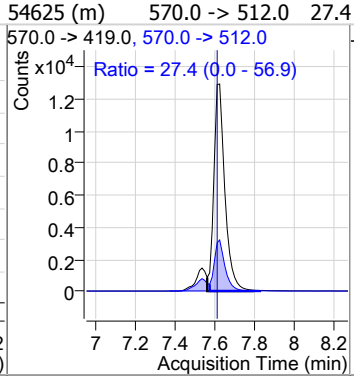


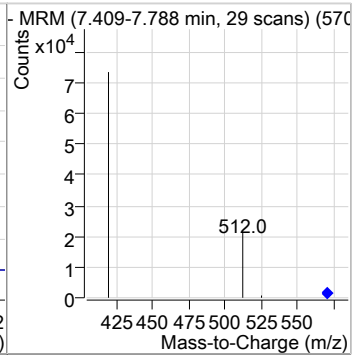


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.88	7.62	0.00	54625 (m)	570.0 -> 512.0	27.4	0.0	56.9

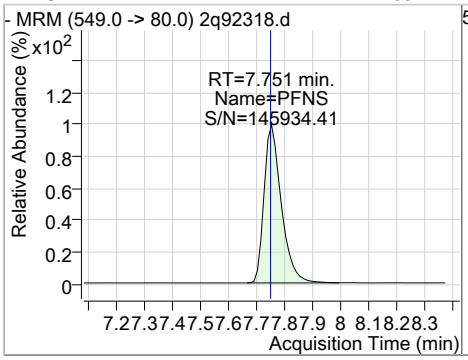


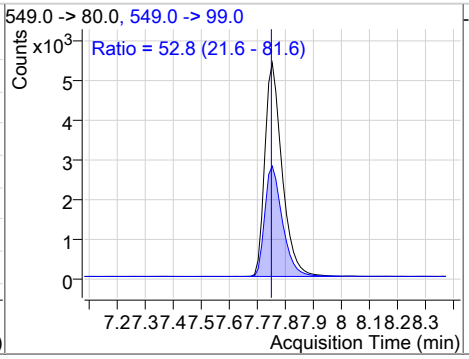


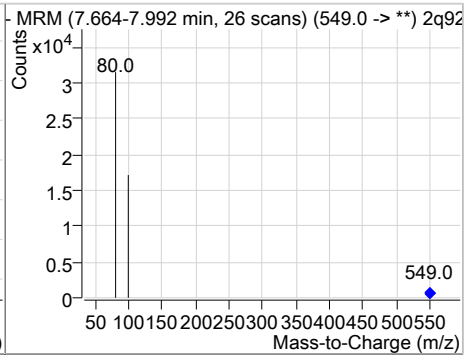




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.63	7.75	0.01	23145	549.0 -> 99.0	52.8	21.6	81.6

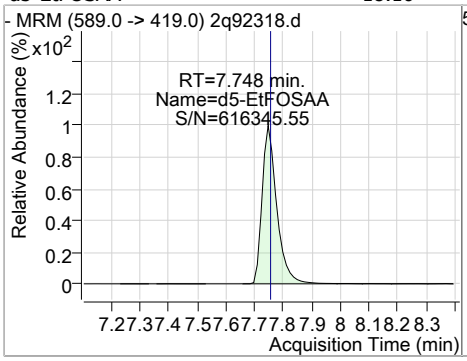


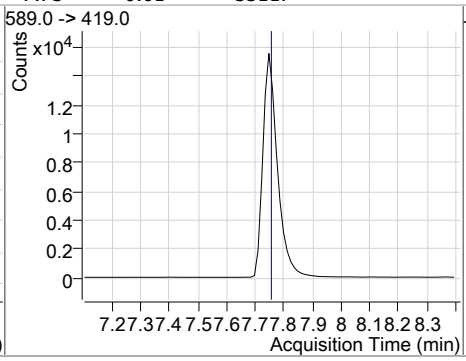


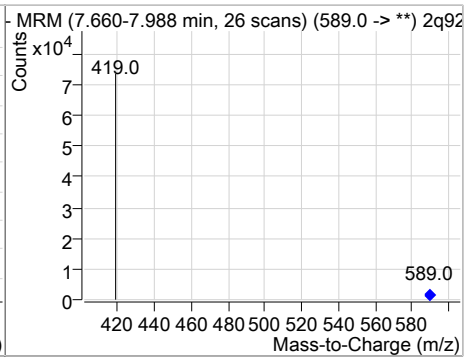


Perfluorinated Compounds by LC/MS/MS

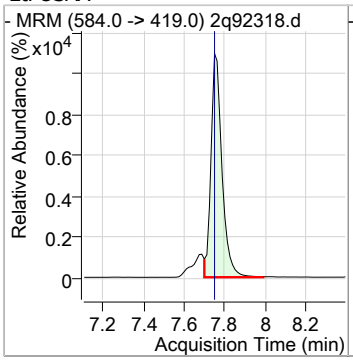
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.16	7.75	-0.01	55117				

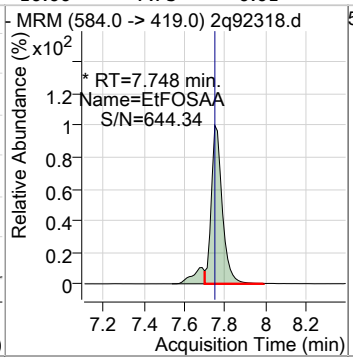


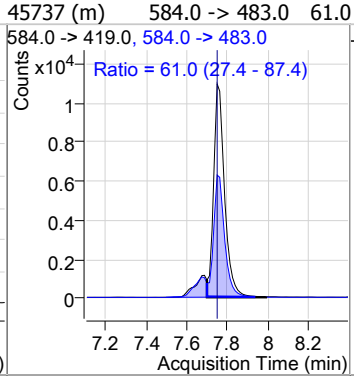


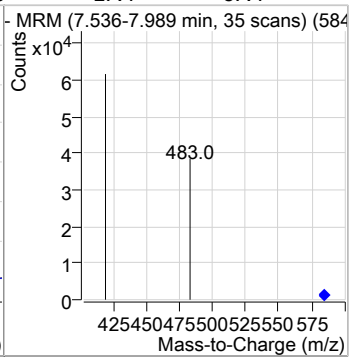


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	16.66	7.75	-0.01	45737 (m)	584.0 -> 483.0	61.0	27.4	87.4

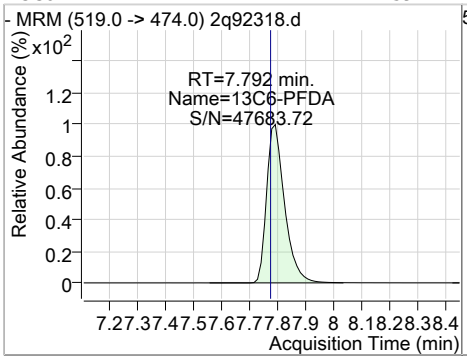


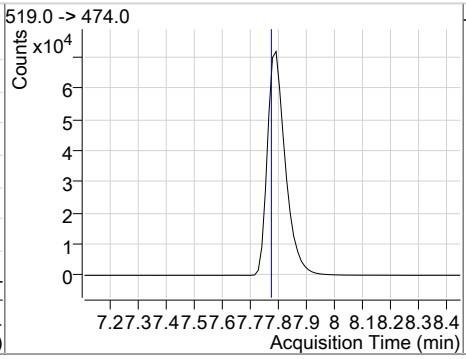


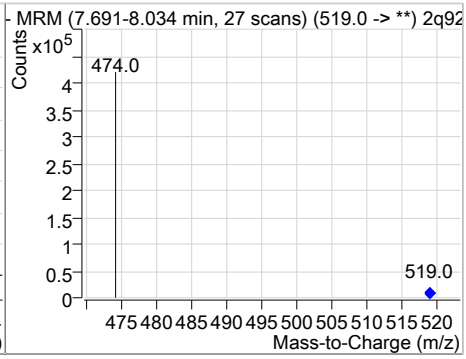




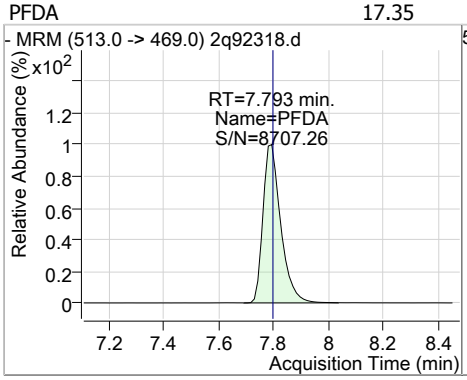
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.59	7.79	0.01	320384				

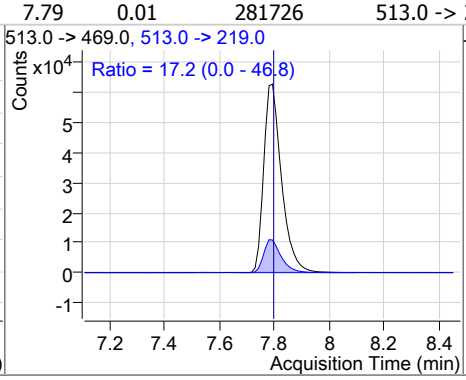


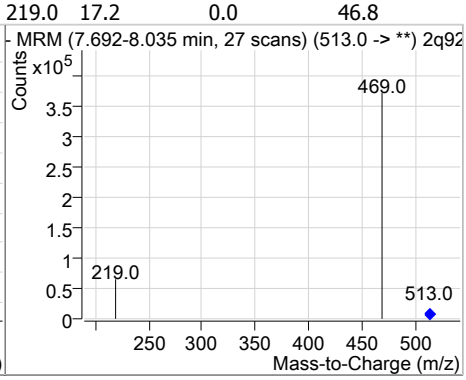




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.35	7.79	0.01	281726	513.0 -> 219.0	17.2	0.0	46.8

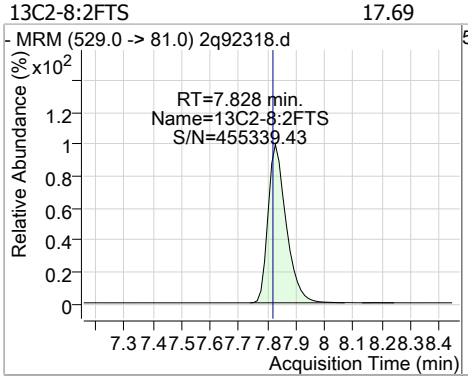


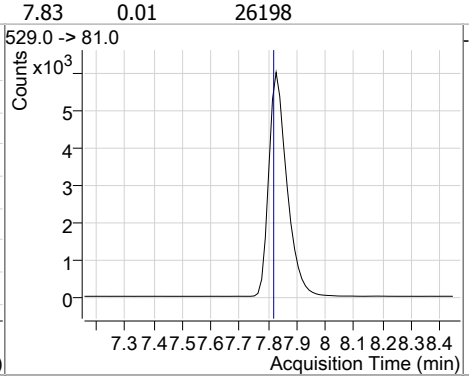


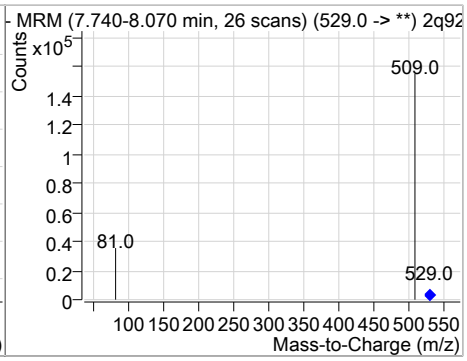


Perfluorinated Compounds by LC/MS/MS

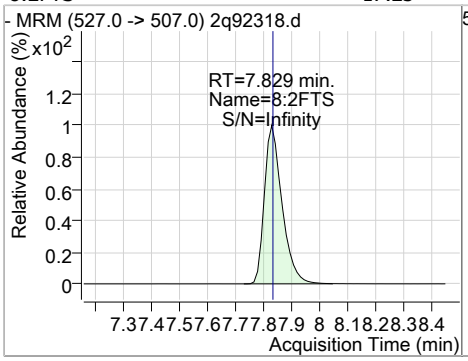
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.69	7.83	0.01	26198				

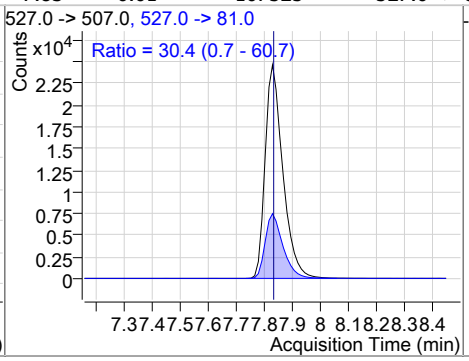


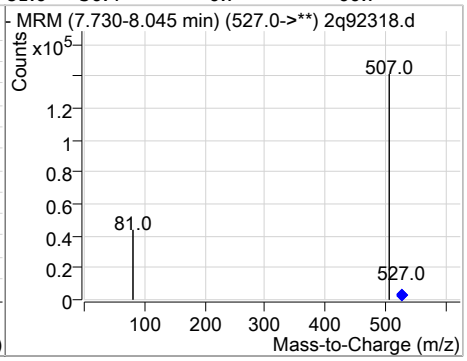




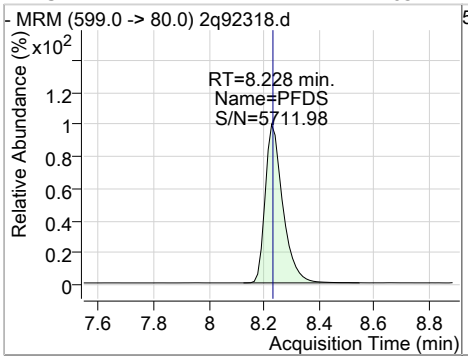
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	17.23	7.83	0.01	107525	527.0 -> 81.0	30.4	0.7	60.7

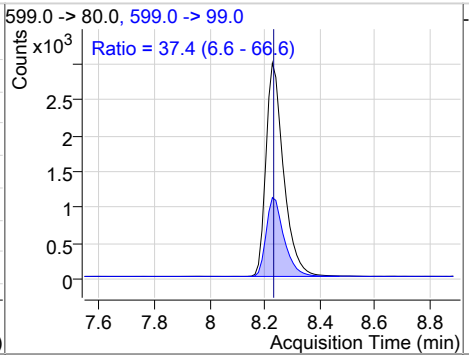


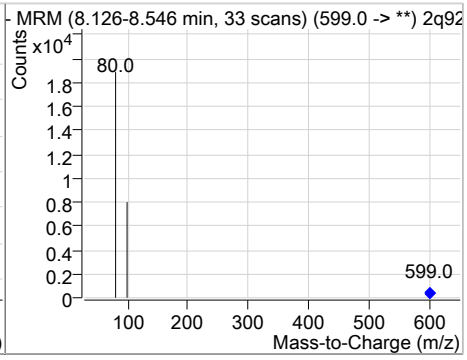




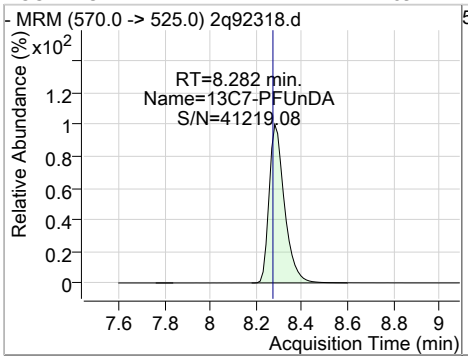
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.83	8.23	0.01	13169	599.0 -> 99.0	37.4	6.6	66.6

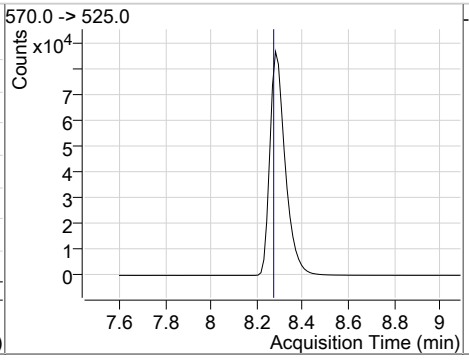


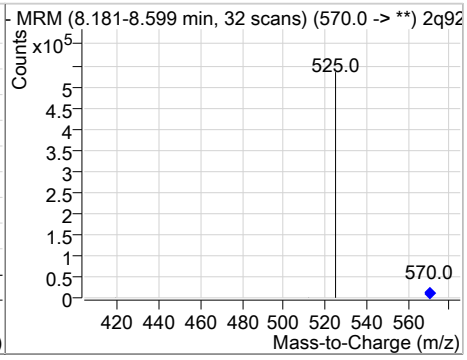




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.89	8.28	0.01	404841				

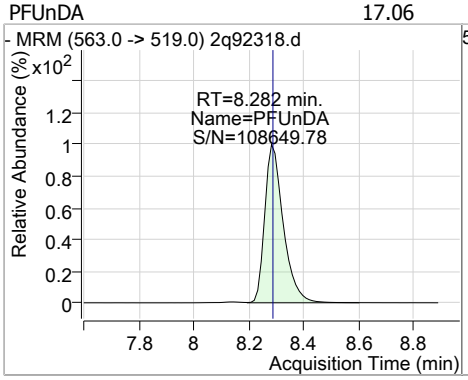


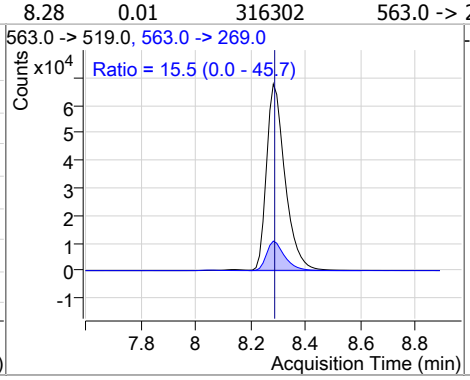


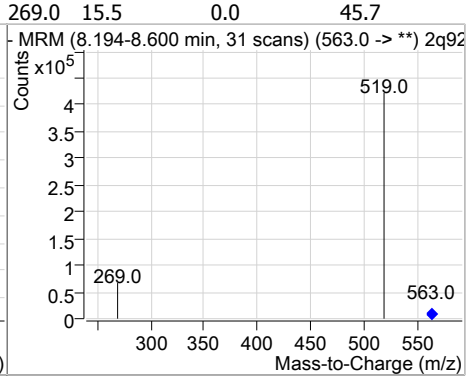


Perfluorinated Compounds by LC/MS/MS

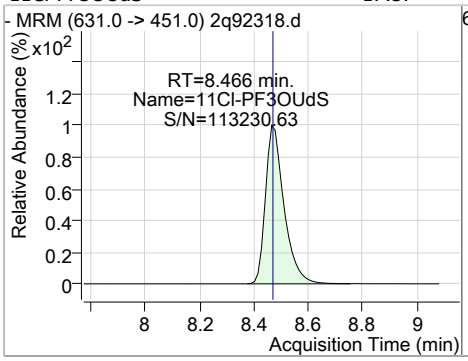
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	17.06	8.28	0.01	316302	563.0 -> 269.0	15.5	0.0	45.7

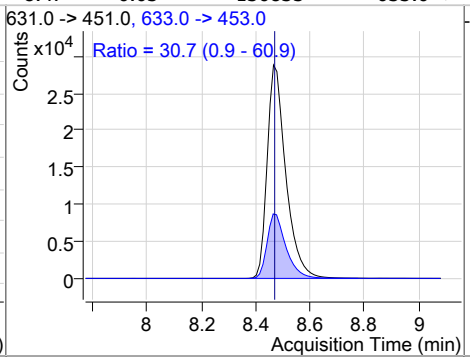


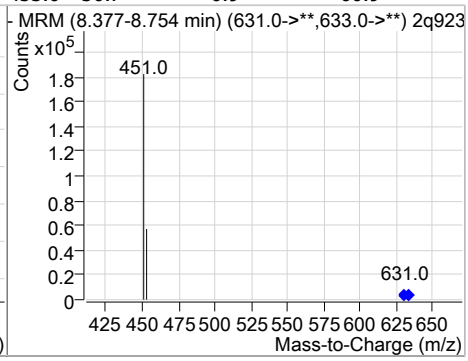




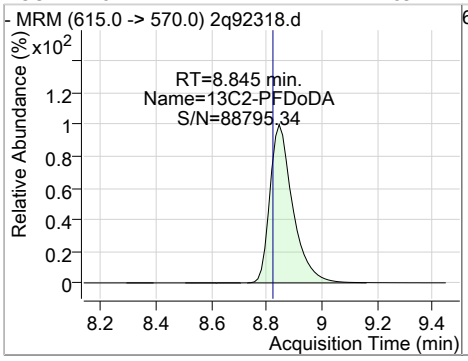
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.57	8.47	0.03	136833	633.0 -> 453.0	30.7	0.9	60.9

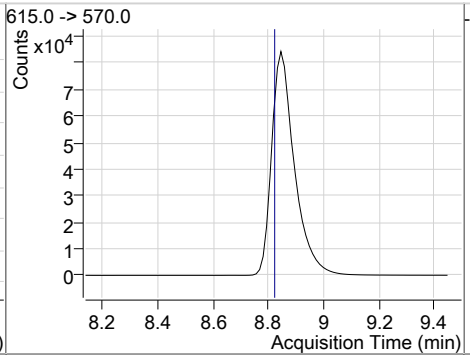


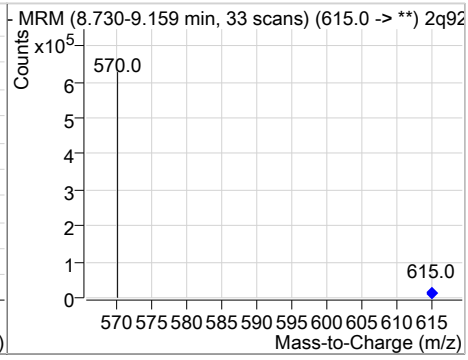




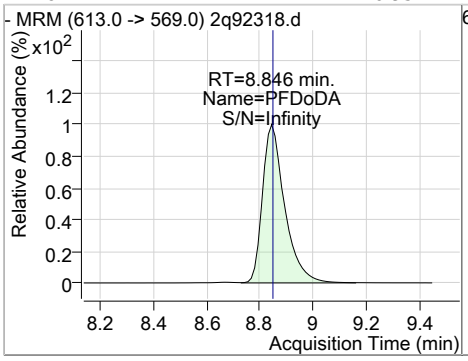
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.89	8.84	0.03	483181				

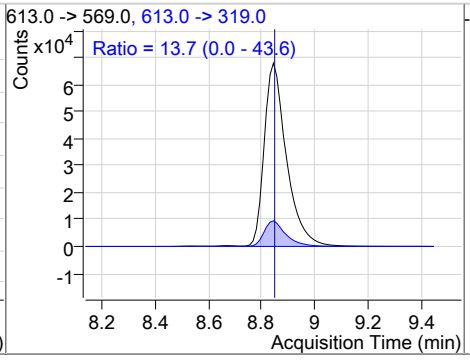


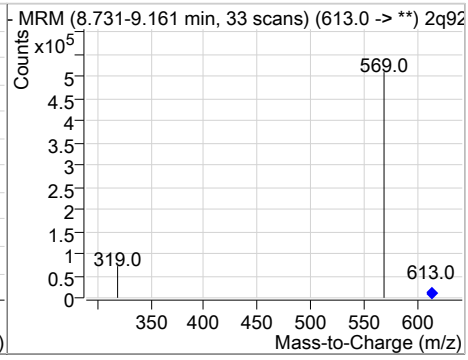




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	16.95	8.85	0.03	392901	613.0 -> 319.0	13.7	0.0	43.6

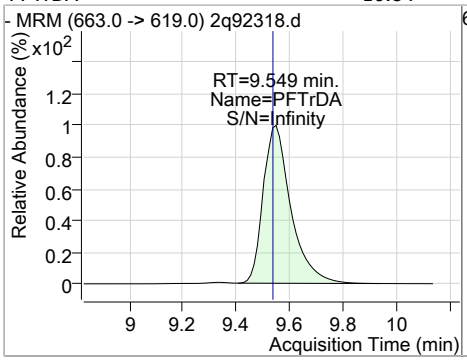


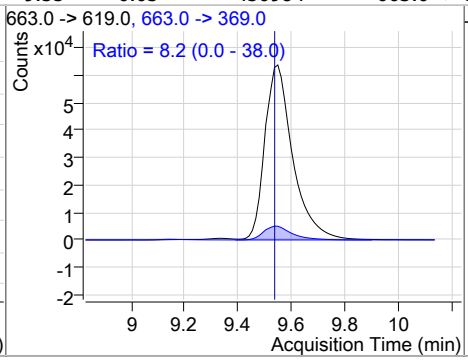


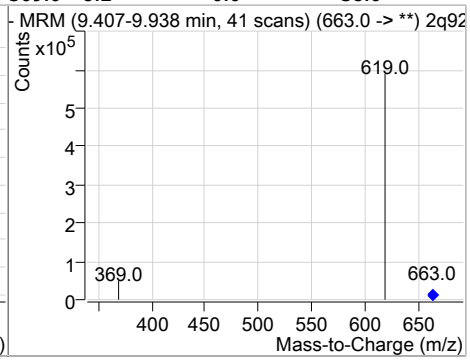


Perfluorinated Compounds by LC/MS/MS

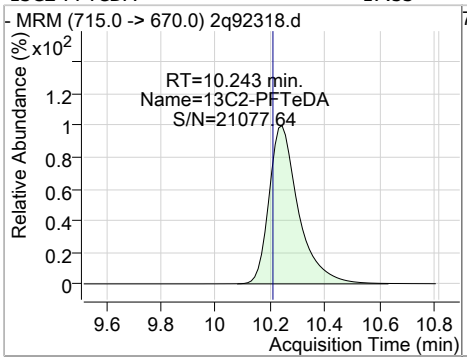
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.84	9.55	0.05	456984	663.0 -> 369.0	8.2	0.0	38.0

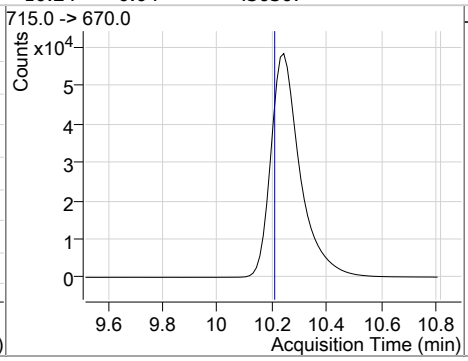


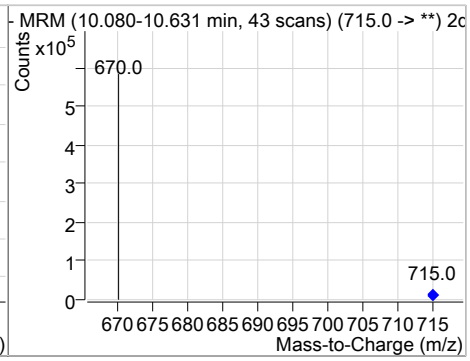




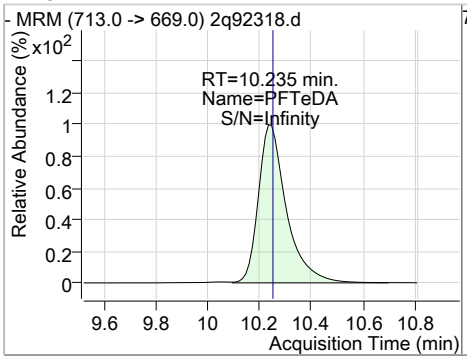
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.53	10.24	0.04	436307				

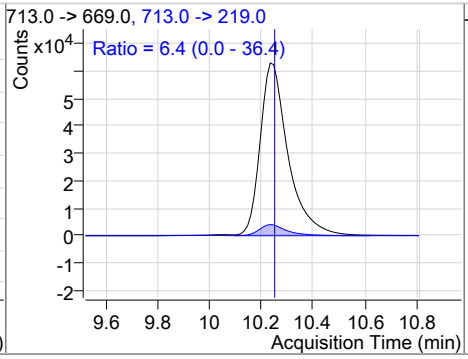


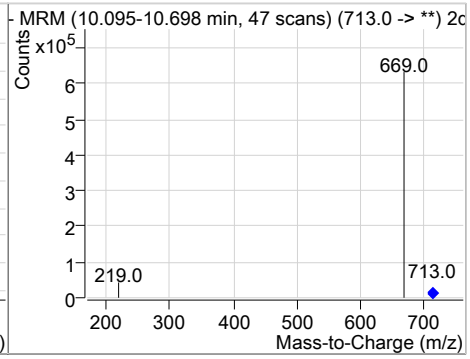




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.77	10.23	0.03	472097	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1293-CC1287
Lab FileID: 2Q92318.D
Injection Time: 06/02/22 18:57
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92330.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 10:42:51 PM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

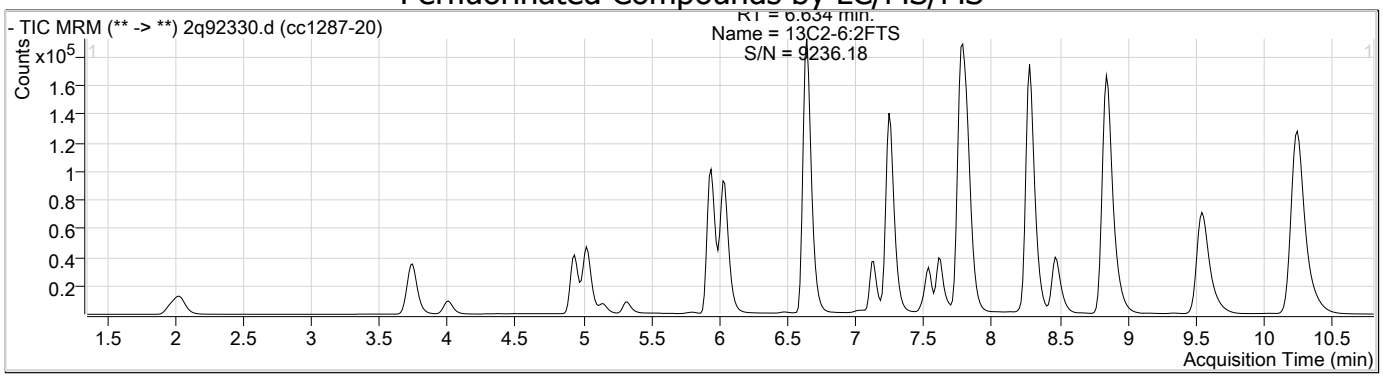
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	55402	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	68724	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	79143	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	116946	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	166574	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	230270	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	261329	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	335192	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	419052	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	496920	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	441769	20.00	µg/L	0.038
M8-FOSA	7.136	506.0 -> 78.0	68451	20.00	µg/L	-0.013
M3-PFBS	4.004	302.0 -> 99.0	9103	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	13192	20.00	µg/L	0.000
M8-PFOS	7.237	507.0 -> 99.0	18731	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	8360	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	18756	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	25814	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	68675	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4497	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	24146	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8360	17.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.9%		
13C2-6:2FTS	6.634	429.0 -> 81.0	18756	18.14	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
13C2-8:2FTS	7.828	529.0 -> 81.0	25814	17.43	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.2%		
13C2-PFDoDA	8.845	615.0 -> 570.0	496920	18.40	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.0%		
13C2-PFTeDA	10.243	715.0 -> 670.0	441769	17.75	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C3-PFBS	4.004	302.0 -> 99.0	9103	17.90	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%		
13C3-PFHxS	5.967	402.0 -> 99.0	13192	18.50	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C4-PFBA	2.027	217.0 -> 172.0	68724	17.79	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C4-PFHpA	5.941	367.0 -> 322.0	166574	17.94	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.7%		
d5-EtFOSAA	7.748	589.0 -> 419.0	55402	18.25	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.3%		
13C5-PFHxA	5.027	318.0 -> 273.0	116946	17.32	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.6%		
13C5-PFPeA	3.749	268.0 -> 223.0	79143	17.36	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

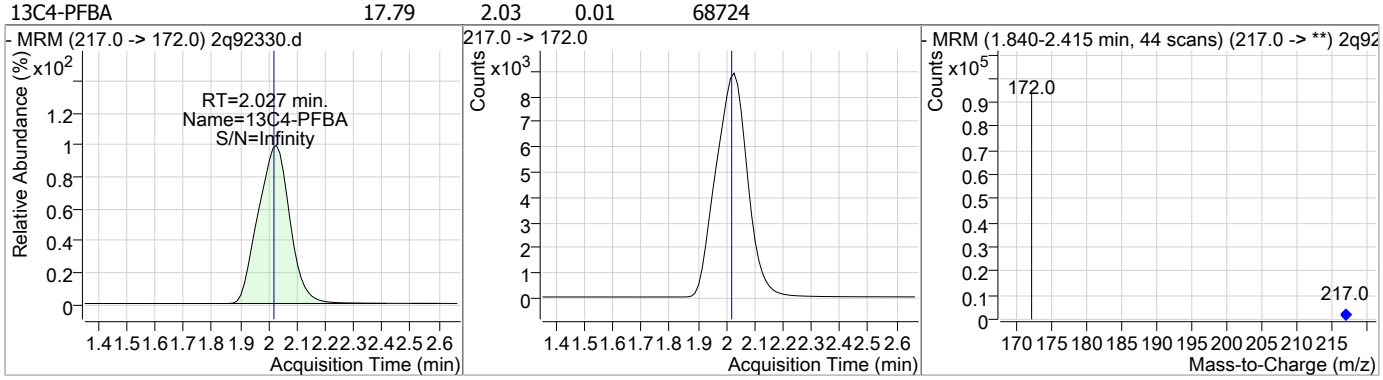
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.8%			
13C6-PFDA	7.779	519.0 -> 474.0	335192	18.40	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.0%			
13C7-PFUnDA	8.282	570.0 -> 525.0	419052	18.52	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.6%			
13C8-FOSA	7.136	506.0 -> 78.0	68451	18.60	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%			
13C8-PFOA	6.649	421.0 -> 376.0	230270	17.89	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
13C8-PFOS	7.237	507.0 -> 99.0	18731	18.05	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.2%			
13C9-PFNA	7.252	472.0 -> 427.0	261329	17.92	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.6%			
d3-MeFOSAA	7.610	573.0 -> 419.0	68675	17.91	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4497	17.27	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%			
d3-MeFOSA	7.539	515.0 -> 169.0	24146	17.25	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	72664	16.59	µg/L		99
6:2FTS	6.635	427.0 -> 407.0	118031	17.07	µg/L		100
8:2FTS	7.829	527.0 -> 507.0	111354	18.11	µg/L		99
EtFOSAA	7.761	584.0 -> 419.0	47496	17.21	µg/L	m	95
FOSA	7.137	498.0 -> 78.0	62248	17.32	µg/L		99
MeFOSAA	7.623	570.0 -> 419.0	54993	17.43	µg/L	m	99
PFBA	2.021	213.0 -> 169.0	29834	16.93	µg/L		100
PFBS	4.007	299.0 -> 80.0	26427	17.41	µg/L		99
PFDA	7.780	513.0 -> 469.0	288923	17.01	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	403082	16.91	µg/L		100
PFDS	8.228	599.0 -> 80.0	13066	17.09	µg/L		98
PFHpA	5.943	363.0 -> 319.0	238205	17.49	µg/L		99
PFHpS	6.645	449.0 -> 80.0	27319	17.62	µg/L		100
PFHxA	5.028	313.0 -> 269.0	74191	17.15	µg/L		99
PFHxS	5.967	399.0 -> 80.0	28260	17.07	µg/L	m	99
PFNA	7.252	463.0 -> 419.0	253996	17.48	µg/L		99
PFNS	7.751	549.0 -> 80.0	23202	17.59	µg/L		98
PFOA	6.649	413.0 -> 369.0	218422	17.46	µg/L		100
PFOS	7.225	499.0 -> 80.0	27730	16.91	µg/L	m	99
PFPeA	3.751	263.0 -> 219.0	109439	17.96	µg/L		100
PFPeS	5.145	349.0 -> 80.0	18526	17.85	µg/L		99
PFTeDA	10.247	713.0 -> 669.0	480876	17.88	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	470940	16.87	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	323239	16.84	µg/L		99
11Cl-PF3OUdS	8.466	631.0 -> 451.0	140656	17.56	µg/L		100
9Cl-PF3ONS	7.511	531.0 -> 351.0	29768	16.39	µg/L		97
ADONA	6.044	377.0 -> 251.0	293424	16.95	µg/L		100
HFPO-DA	5.326	329.0 -> 169.0	28124	17.35	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	18571	18.24	µg/L		95

= Qualifier out of range, m = manually integrated, + = Area summed

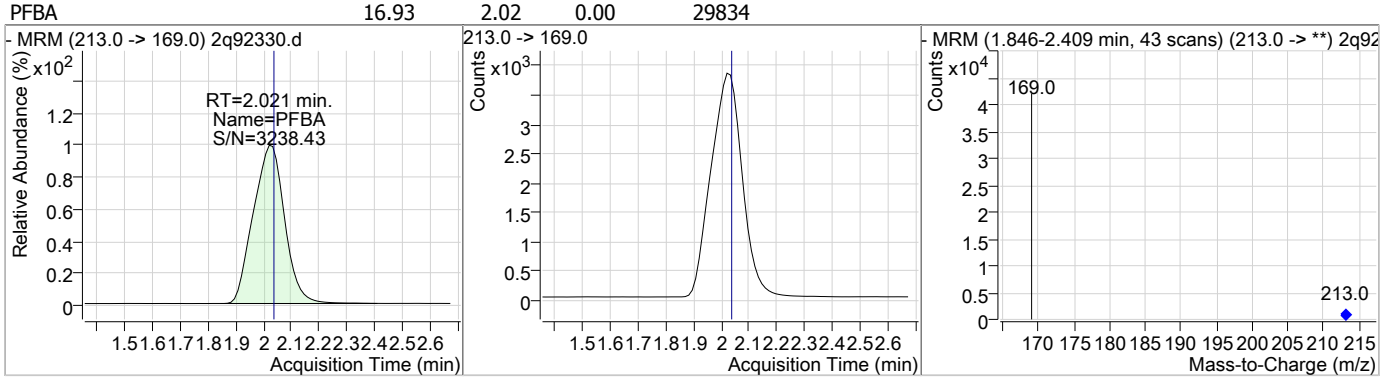
Perfluorinated Compounds by LC/MS/MS



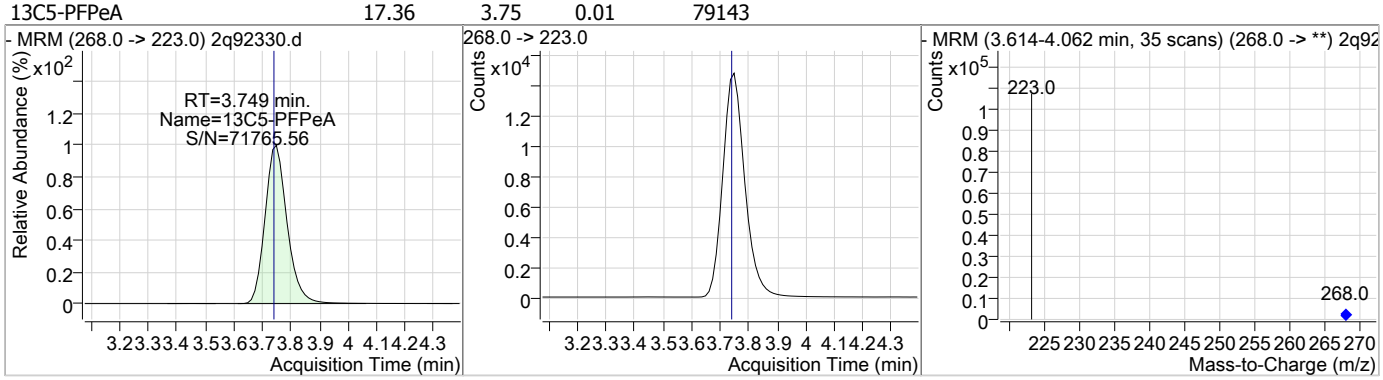
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.79	2.03	0.01	68724				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	16.93	2.02	0.00	29834				

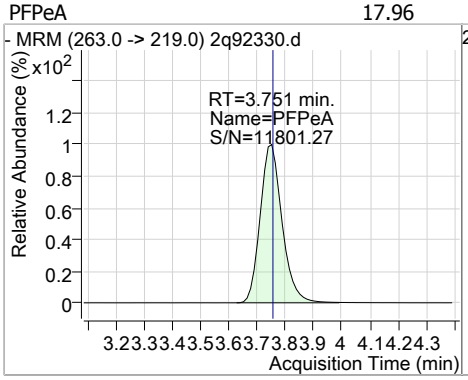


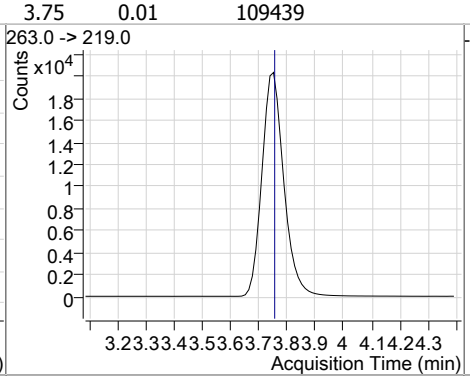
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.36	3.75	0.01	79143				

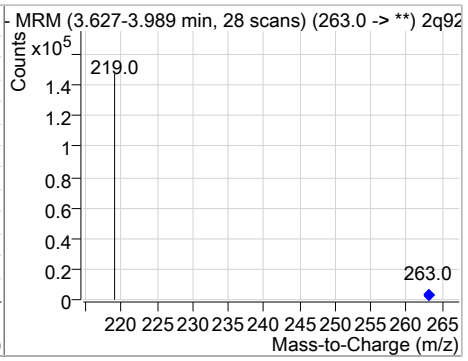


Perfluorinated Compounds by LC/MS/MS

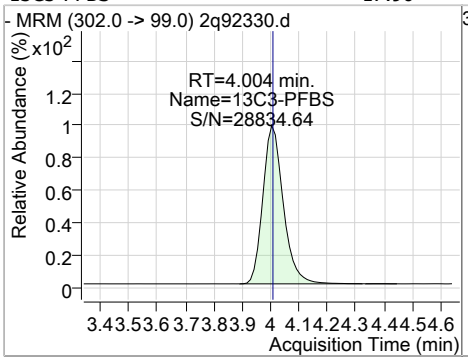
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.96	3.75	0.01	109439				

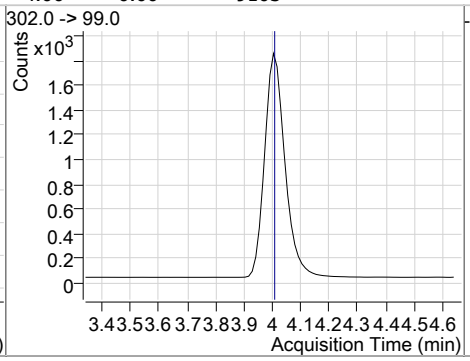


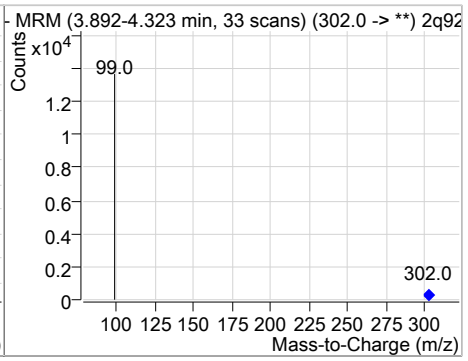




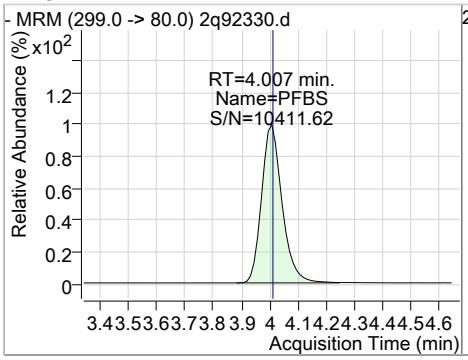
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.90	4.00	0.00	9103				

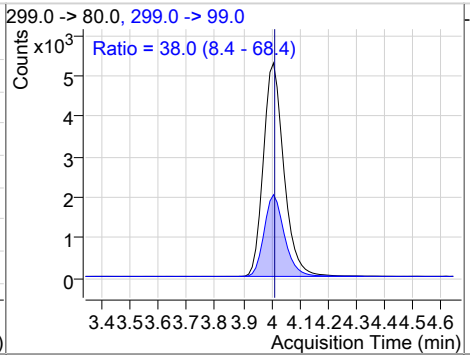


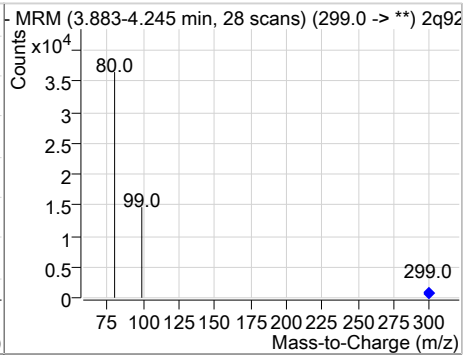




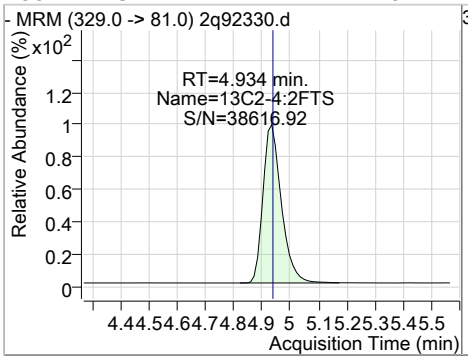
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.41	4.01	0.00	26427	299.0 -> 99.0	38.0	8.4	68.4

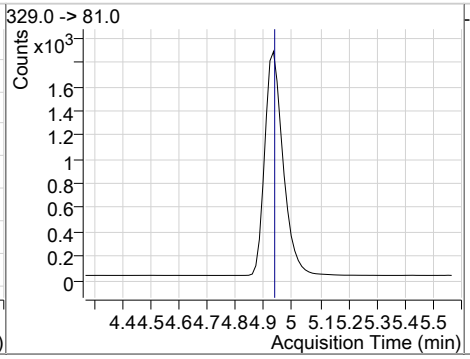


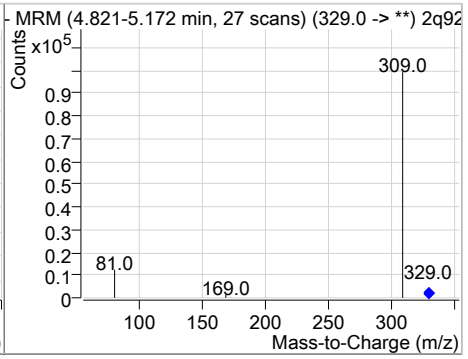




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.97	4.93	0.00	8360				

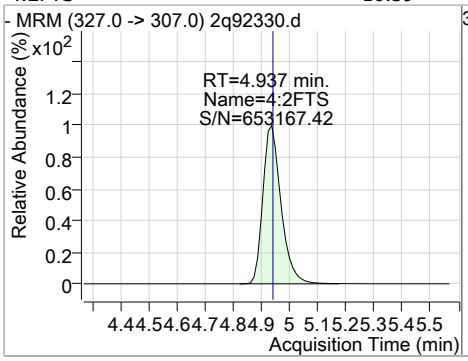


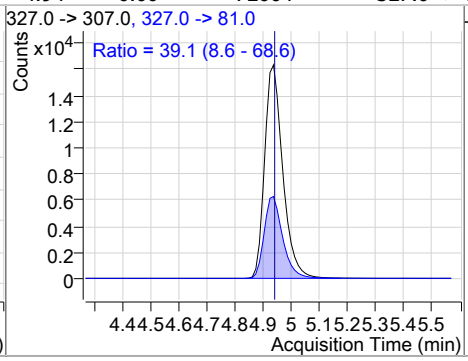


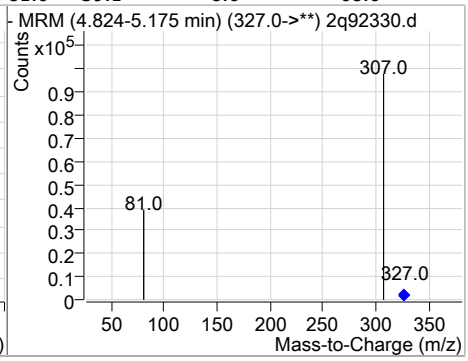


Perfluorinated Compounds by LC/MS/MS

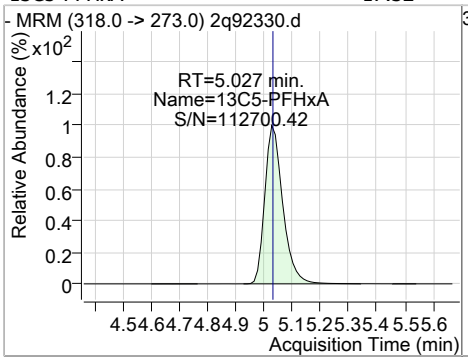
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.59	4.94	0.00	72664	327.0 -> 81.0	39.1	8.6	68.6

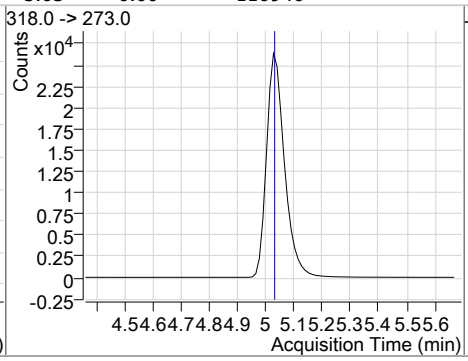


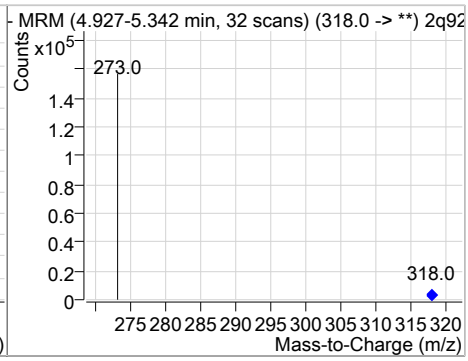




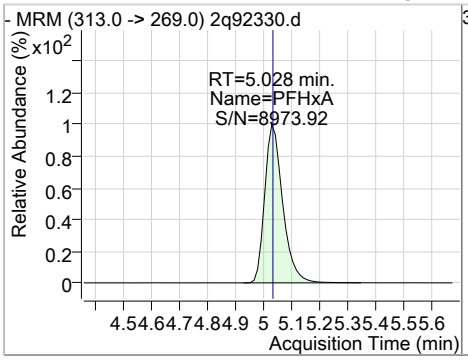
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.32	5.03	0.00	116946				

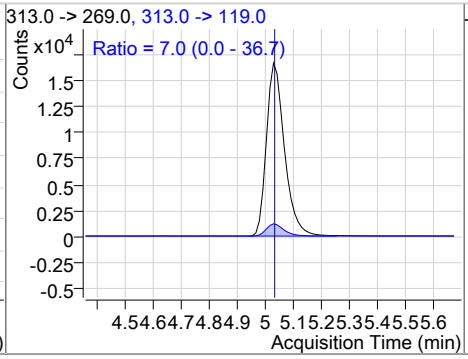


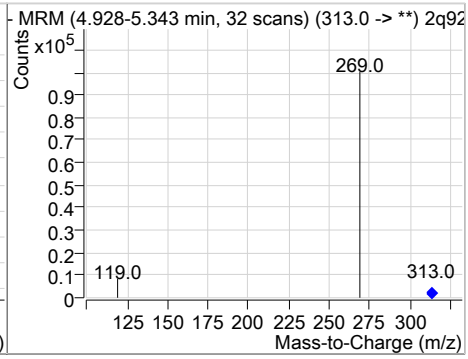




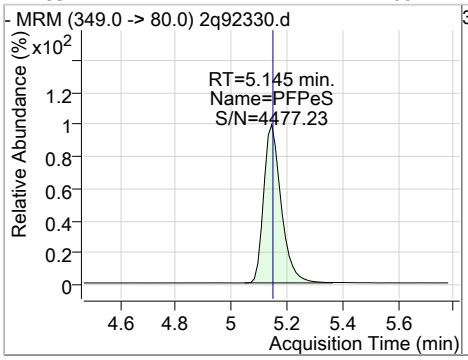
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.15	5.03	0.00	74191	313.0 -> 119.0	7.0	0.0	36.7

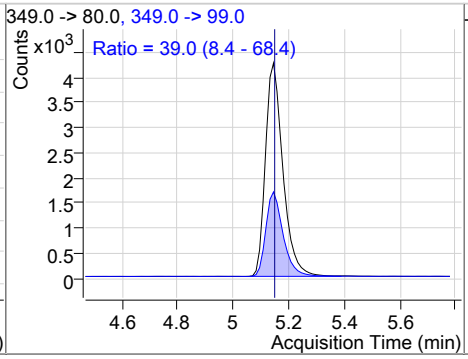


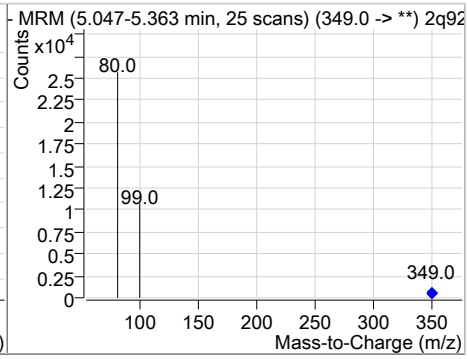




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.85	5.15	0.00	18526	349.0 -> 99.0	39.0	8.4	68.4

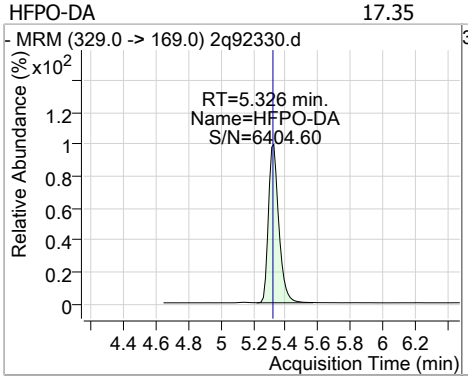


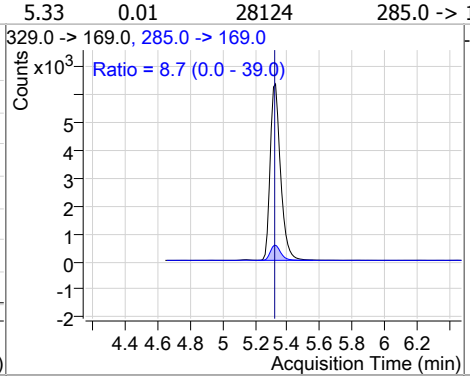


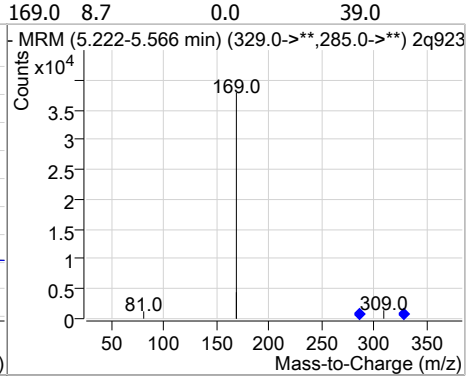


Perfluorinated Compounds by LC/MS/MS

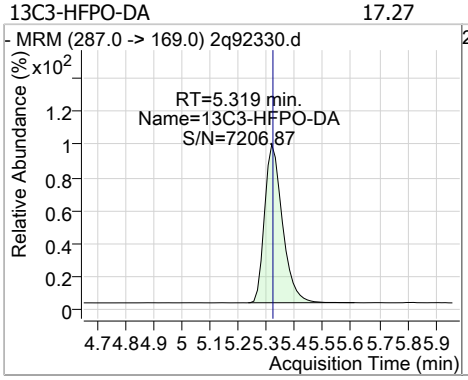
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	17.35	5.33	0.01	28124	285.0 -> 169.0	8.7	0.0	39.0

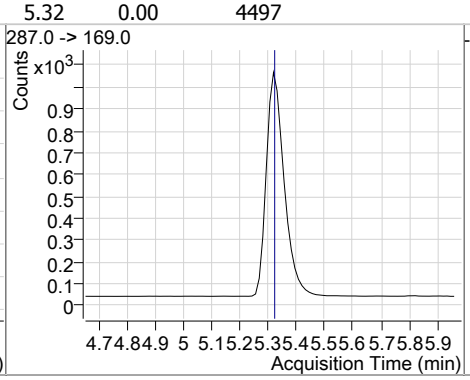


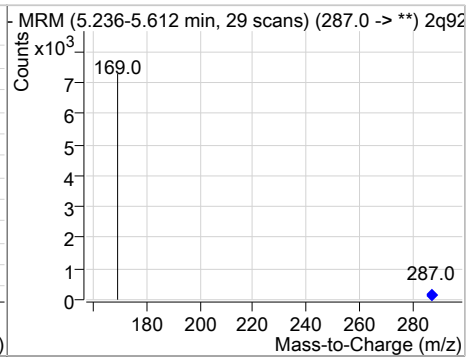




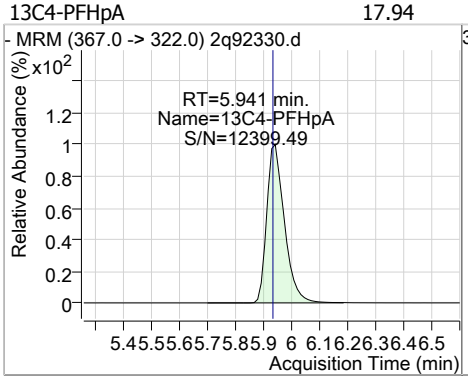
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	17.27	5.32	0.00	4497				

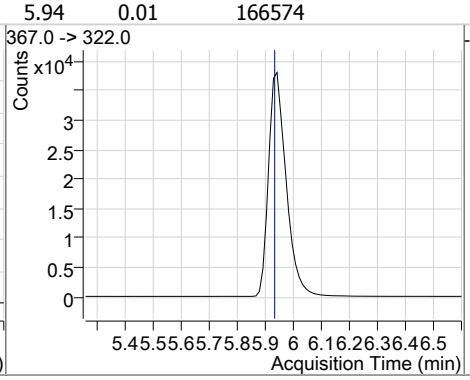


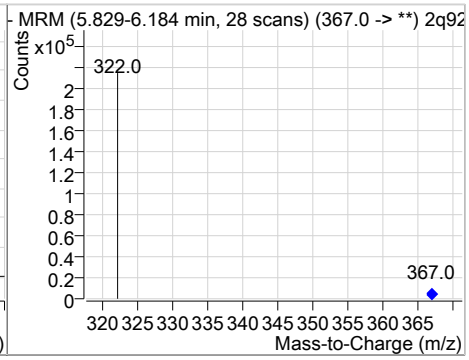




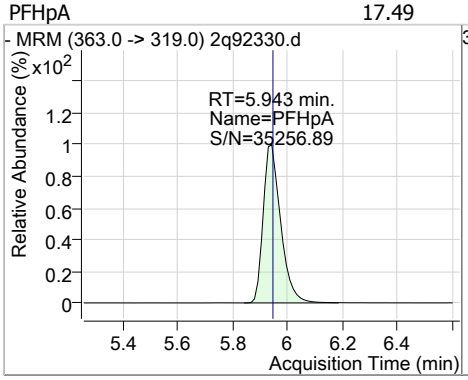
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.94	5.94	0.01	166574				

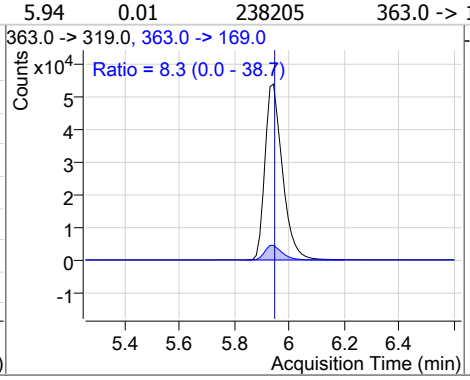


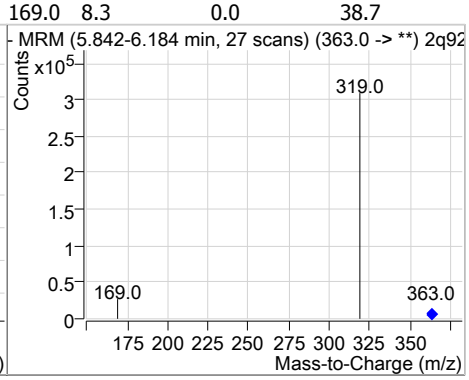




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.49	5.94	0.01	238205	363.0 -> 169.0	8.3	0.0	38.7

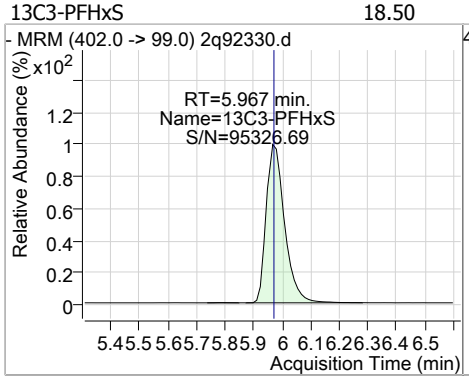


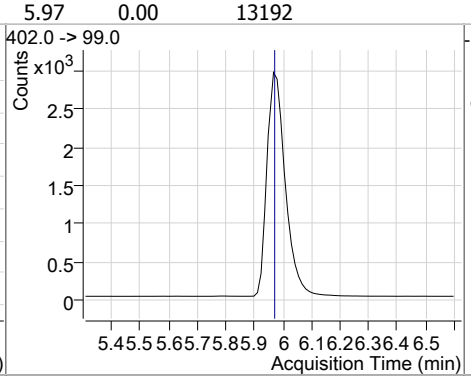


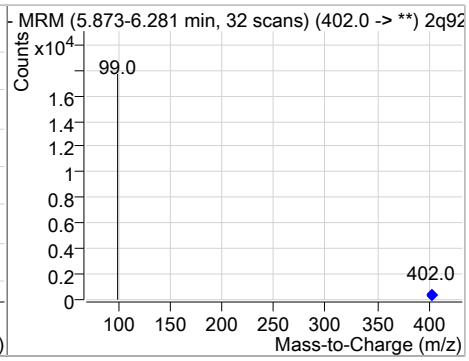


Perfluorinated Compounds by LC/MS/MS

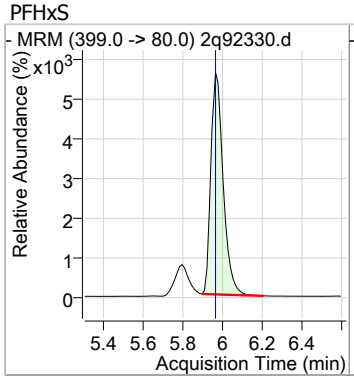
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.50	5.97	0.00	13192				

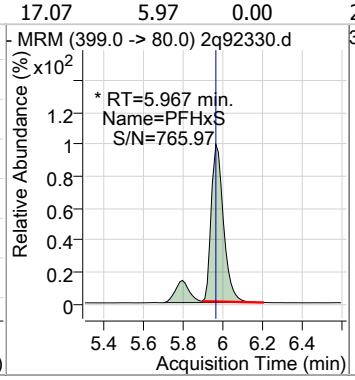


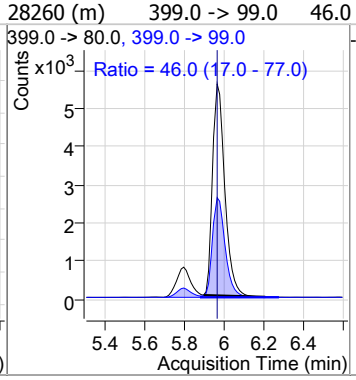


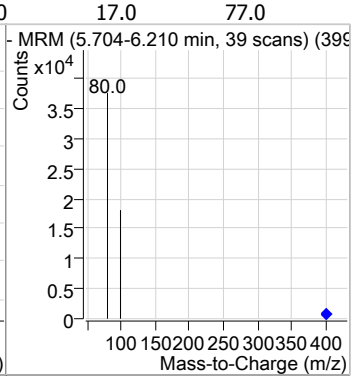


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.07	5.97	0.00	28260 (m)	399.0 -> 99.0	46.0	17.0	77.0

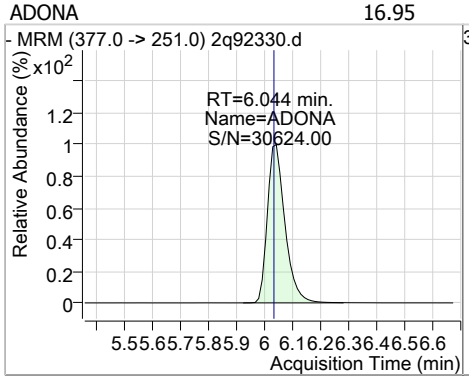


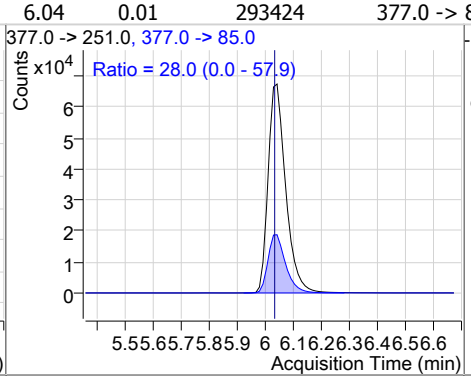


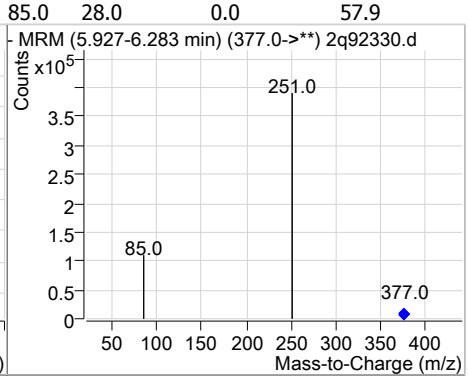




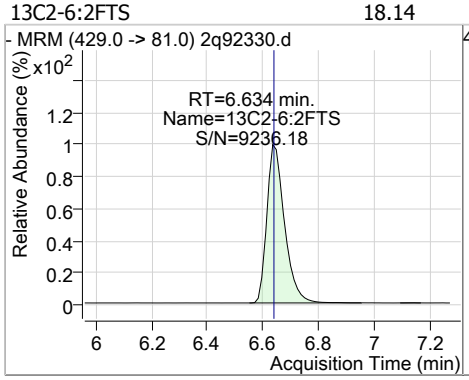
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	16.95	6.04	0.01	293424	377.0 -> 85.0	28.0	0.0	57.9

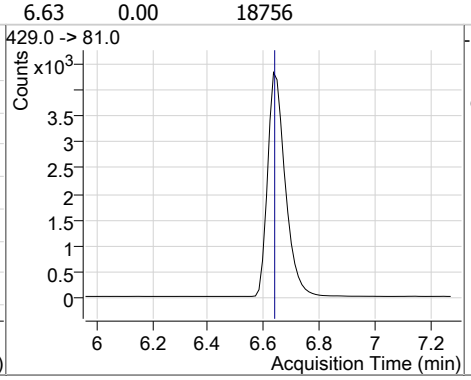


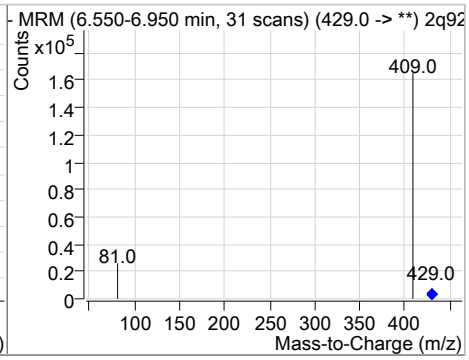




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.14	6.63	0.00	18756				

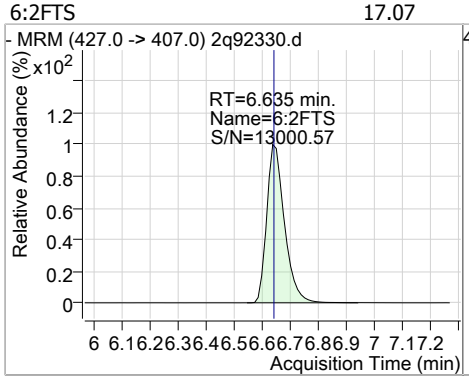


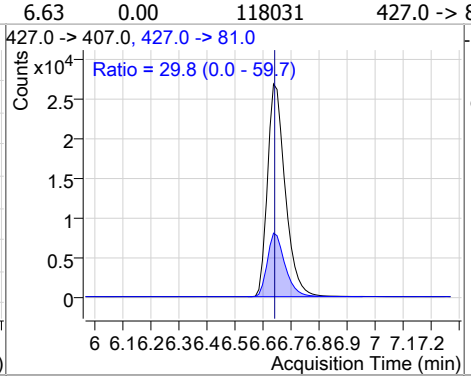


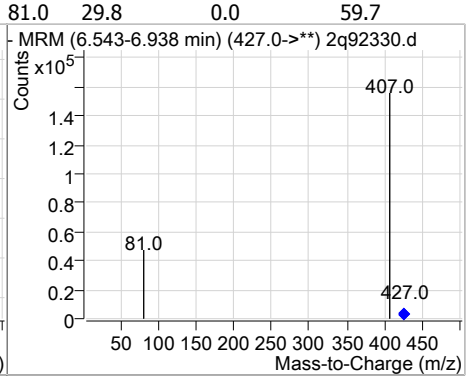


Perfluorinated Compounds by LC/MS/MS

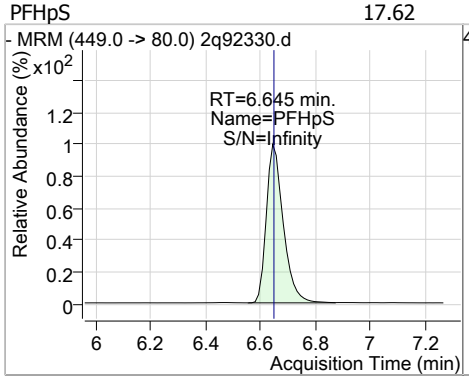
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.07	6.63	0.00	118031	427.0 -> 81.0	29.8	0.0	59.7

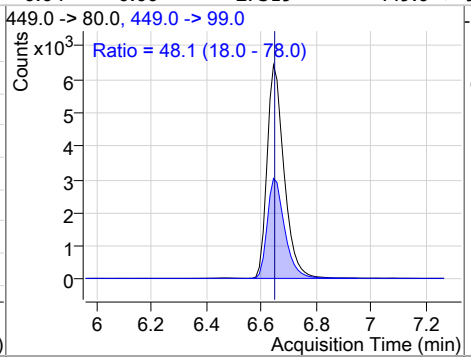


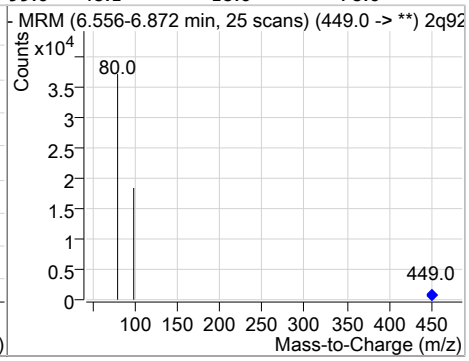




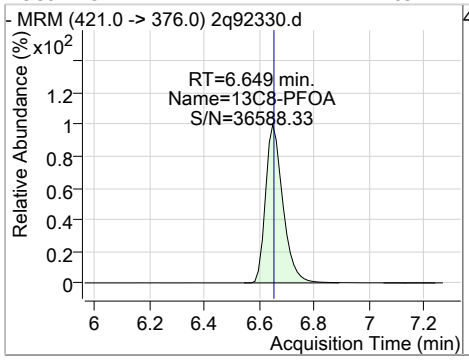
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.62	6.64	0.00	27319	449.0 -> 99.0	48.1	18.0	78.0

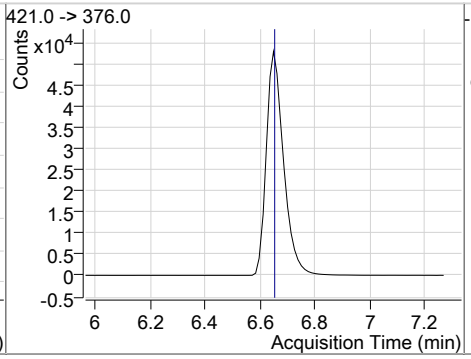


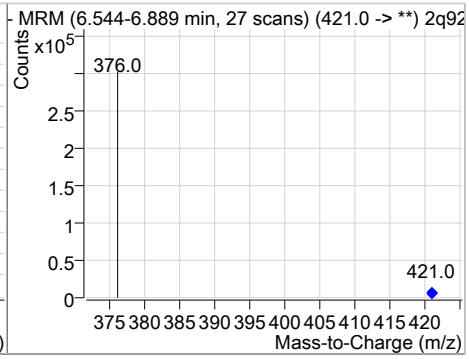




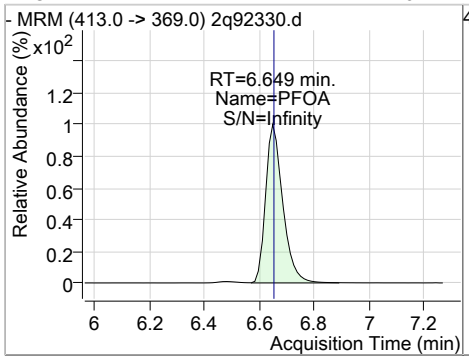
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.89	6.65	0.00	230270				

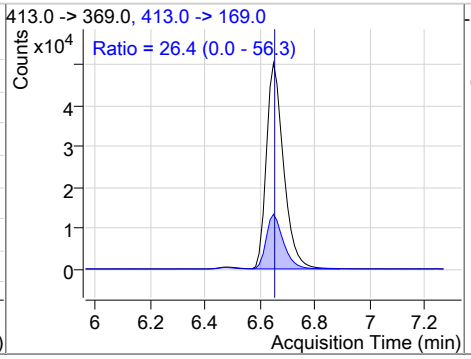


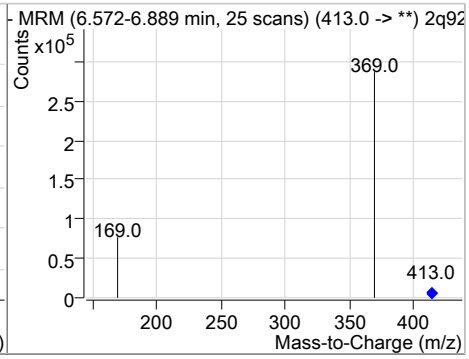




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.46	6.65	0.00	218422	413.0 -> 169.0	26.4	0.0	56.3

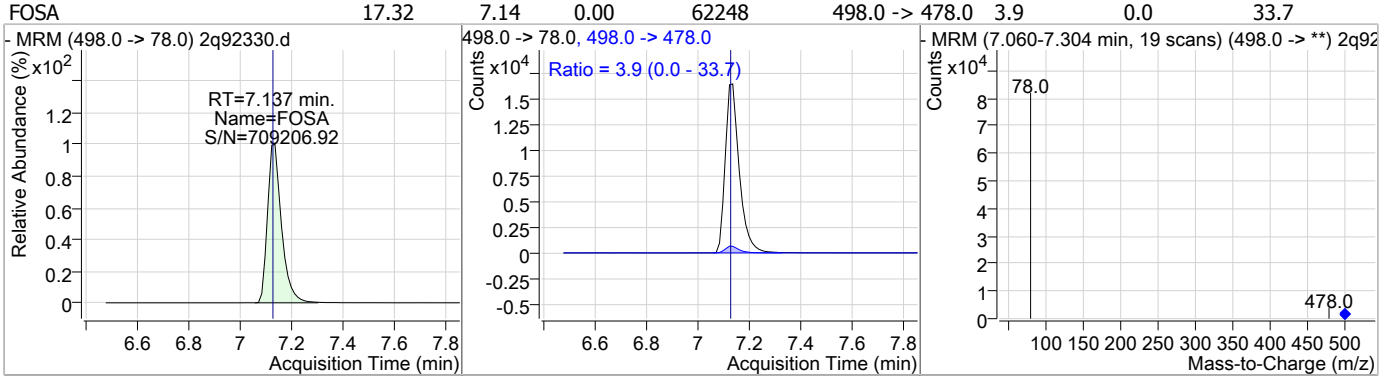




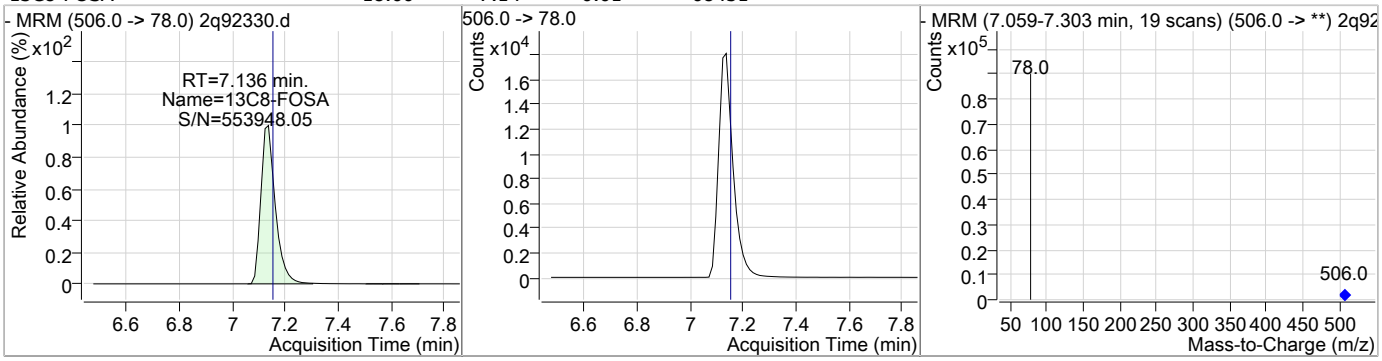


Perfluorinated Compounds by LC/MS/MS

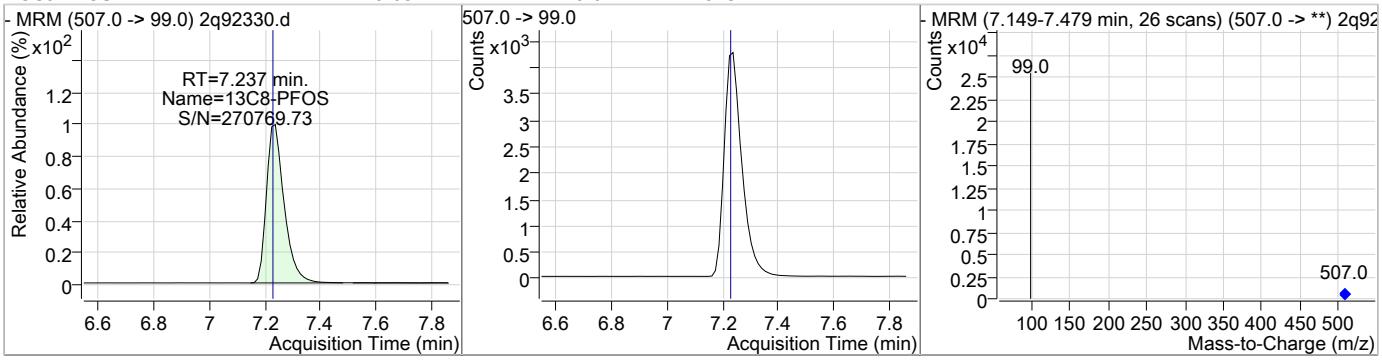
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.32	7.14	0.00	62248	498.0 -> 478.0	3.9	0.0	33.7



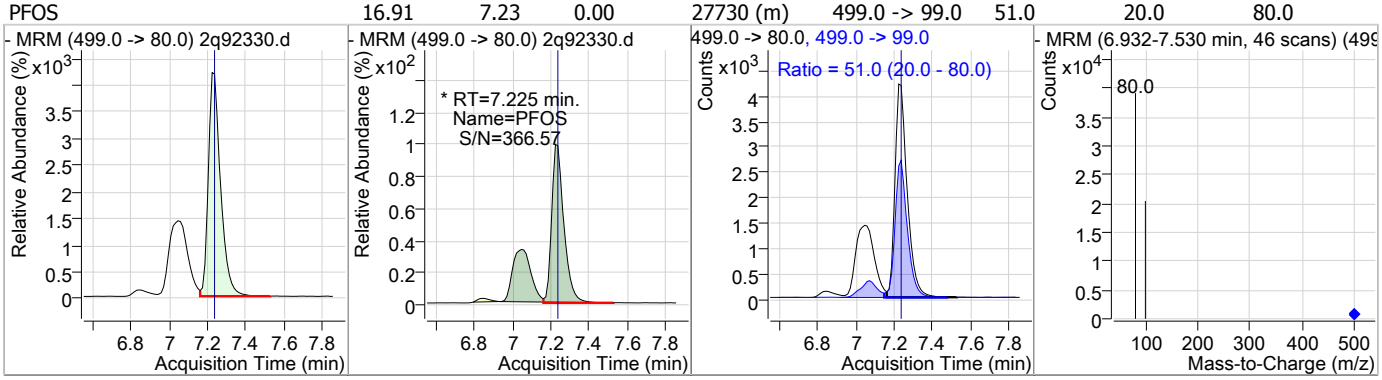
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.60	7.14	-0.01	68451				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.05	7.24	0.01	18731				

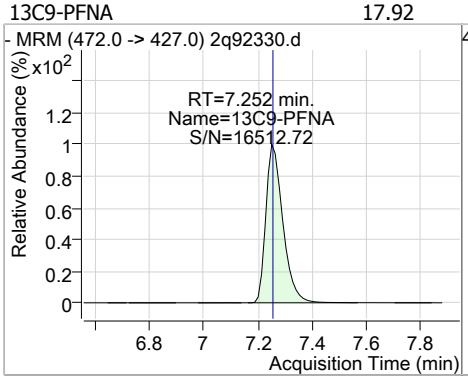


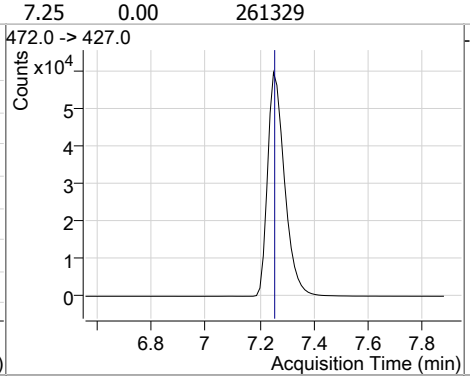
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	16.91	7.23	0.00	27730 (m)	499.0 -> 99.0	51.0	20.0	80.0

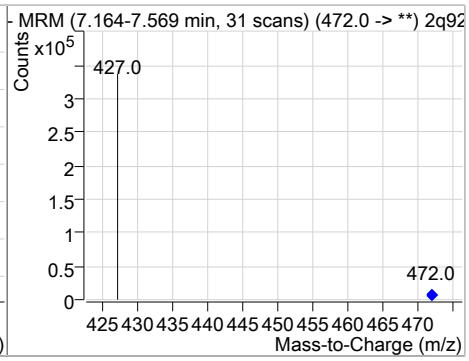


Perfluorinated Compounds by LC/MS/MS

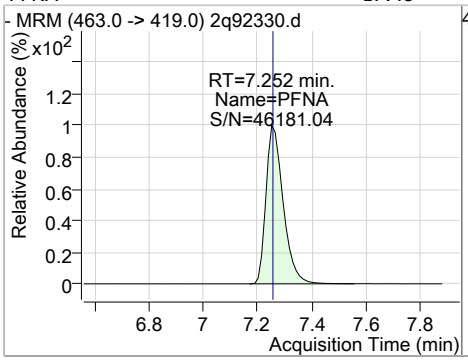
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.92	7.25	0.00	261329				

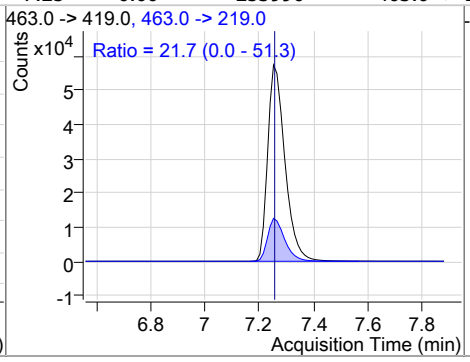


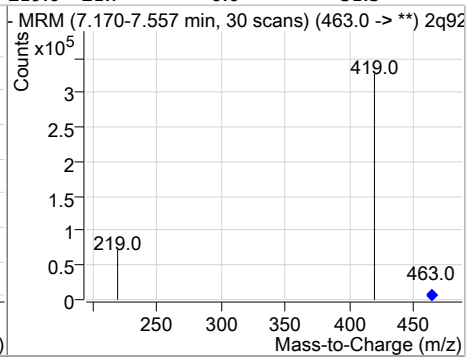




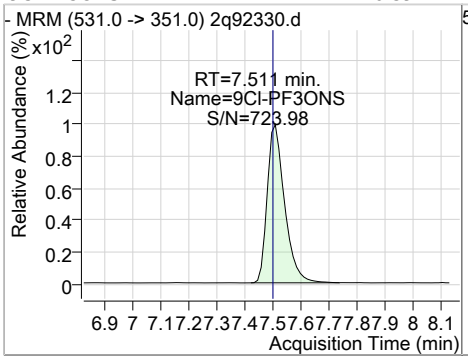
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.48	7.25	0.00	253996	463.0 -> 219.0	21.7	0.0	51.3

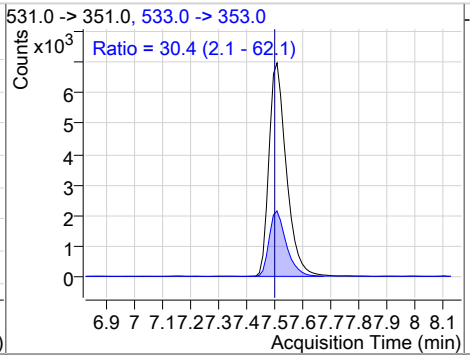


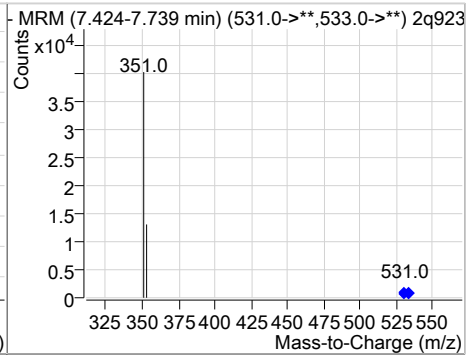




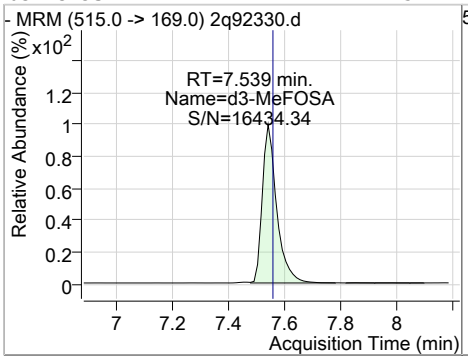
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.39	7.51	0.01	29768	533.0 -> 353.0	30.4	2.1	62.1

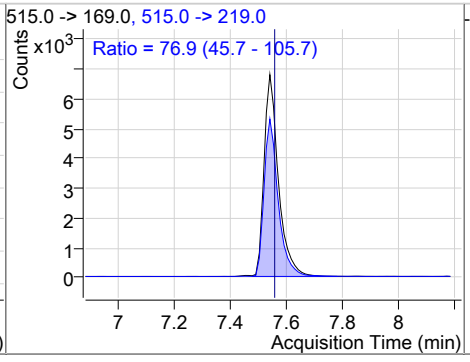


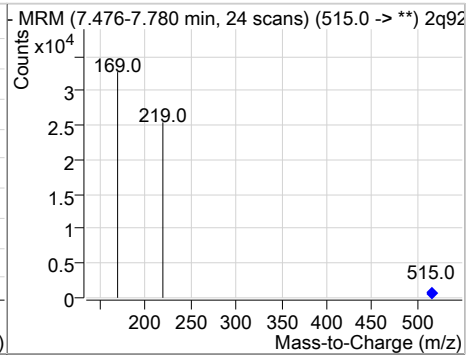




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.25	7.54	-0.01	24146	515.0 -> 219.0	76.9	45.7	105.7

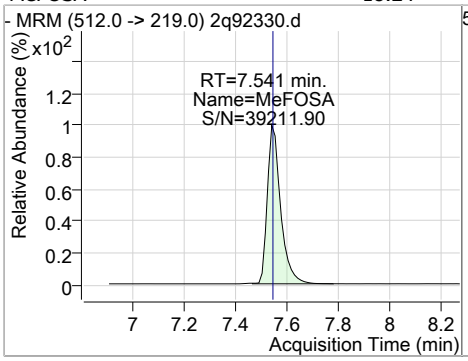


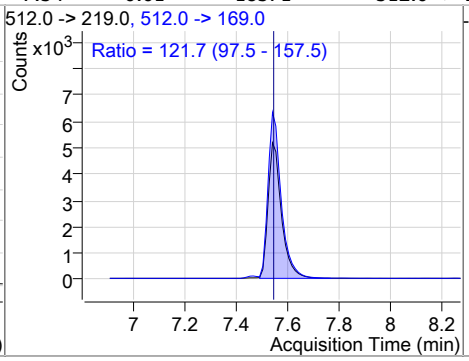


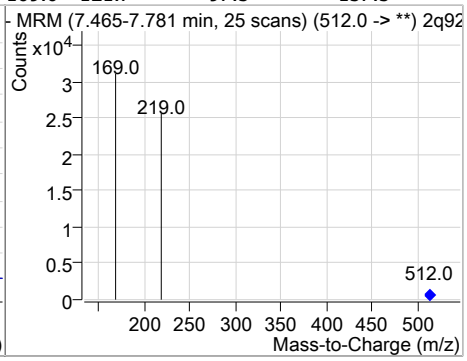


Perfluorinated Compounds by LC/MS/MS

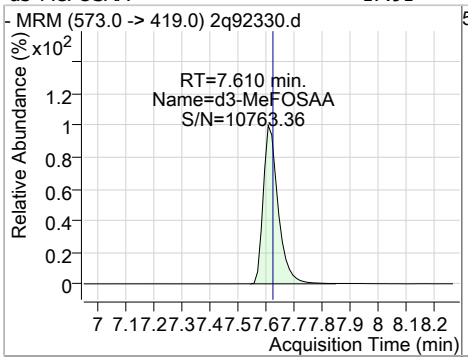
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.24	7.54	-0.01	18571	512.0 -> 169.0	121.7	97.5	157.5

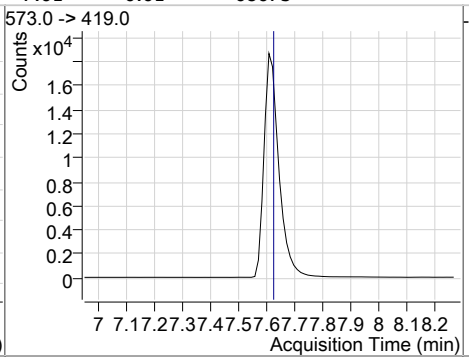


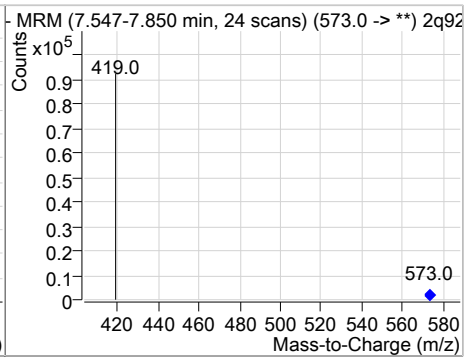




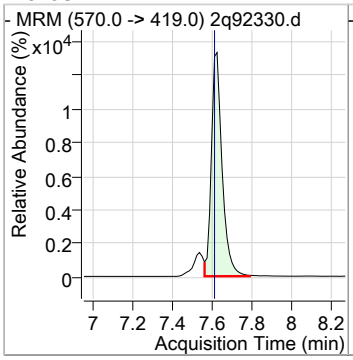
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.91	7.61	-0.01	68675				

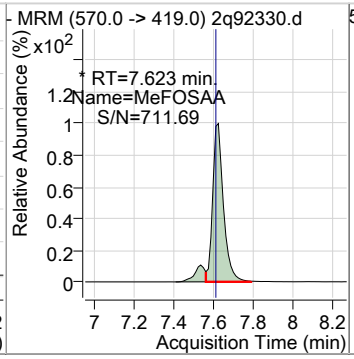


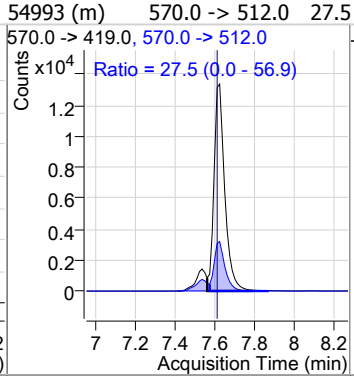


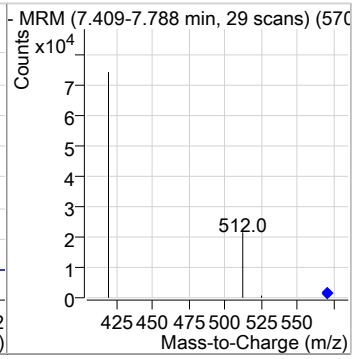


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.43	7.62	0.00	54993 (m)	570.0 -> 512.0	27.5	0.0	56.9

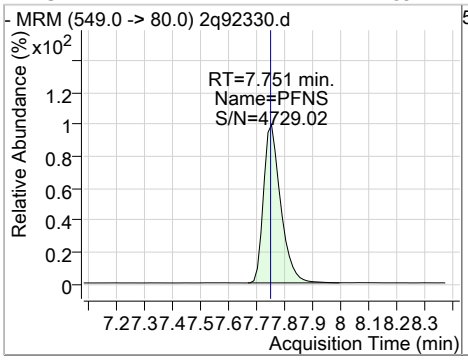


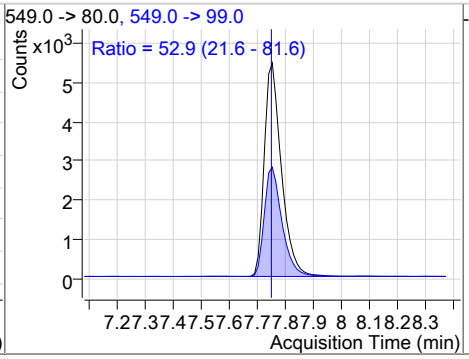


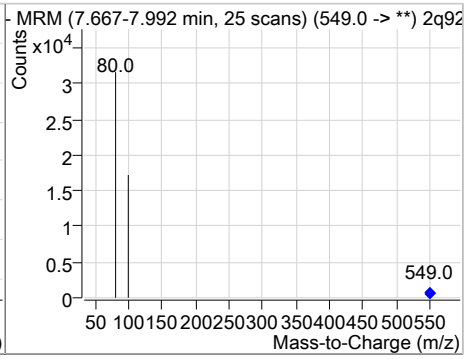




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.59	7.75	0.01	23202	549.0 -> 99.0	52.9	21.6	81.6

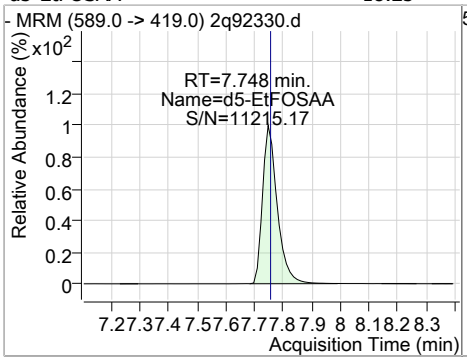


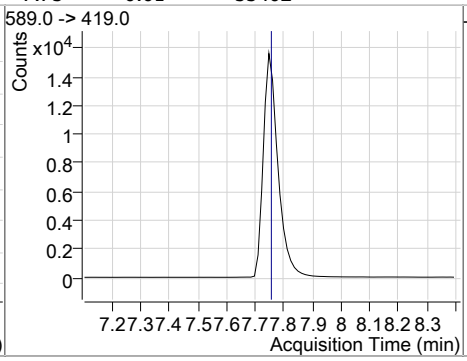


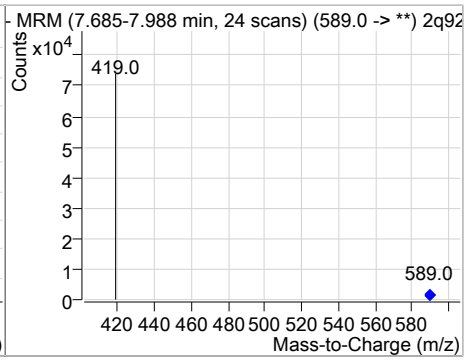


Perfluorinated Compounds by LC/MS/MS

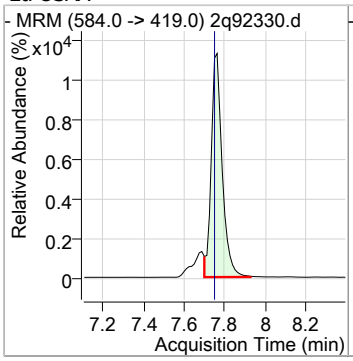
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.25	7.75	-0.01	55402				

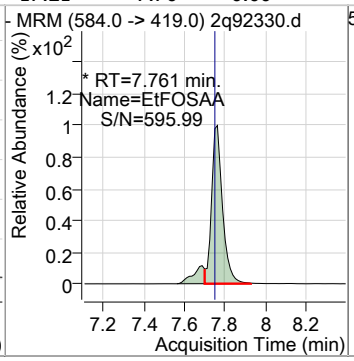


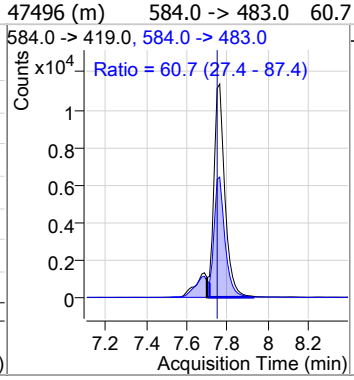


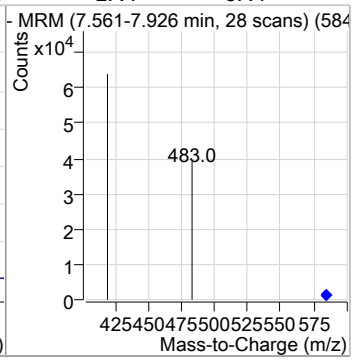


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.21	7.76	0.00	47496 (m)	584.0 -> 483.0	60.7	27.4	87.4

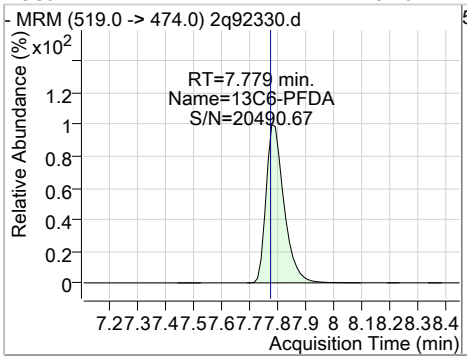


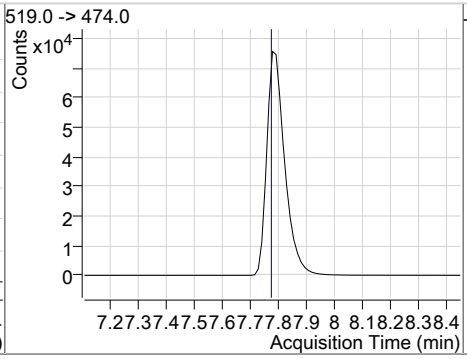


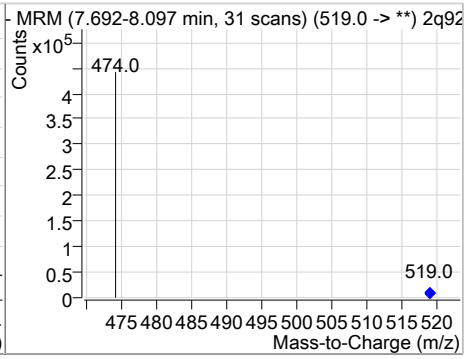




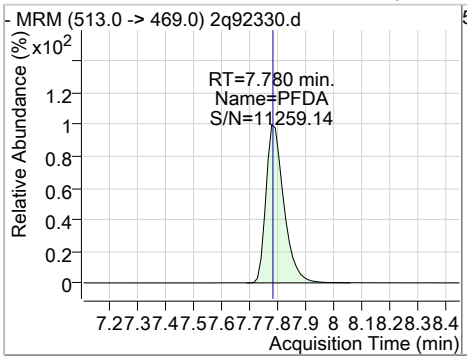
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.40	7.78	0.00	335192				

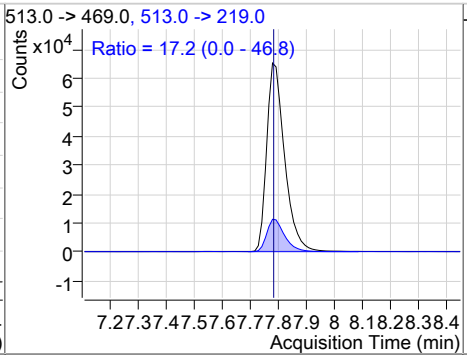


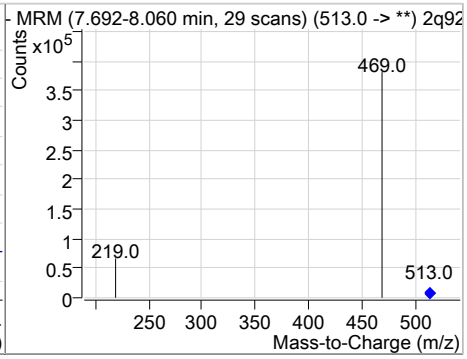




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.01	7.78	0.00	288923	513.0 -> 219.0	17.2	0.0	46.8

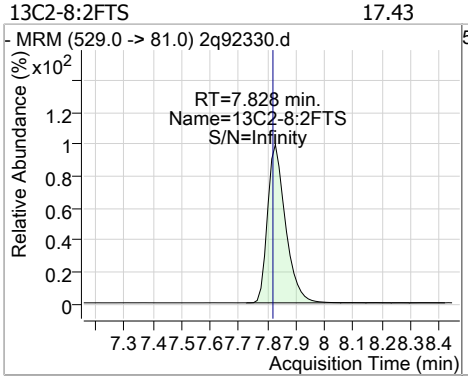


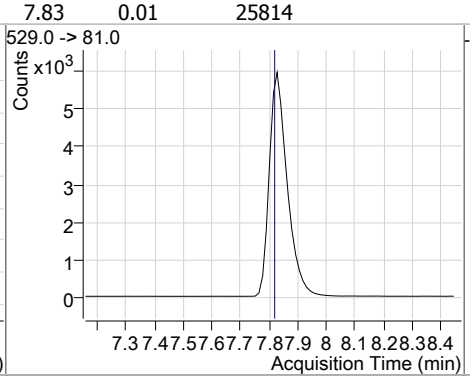


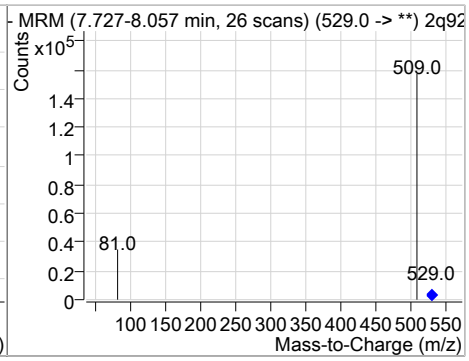


Perfluorinated Compounds by LC/MS/MS

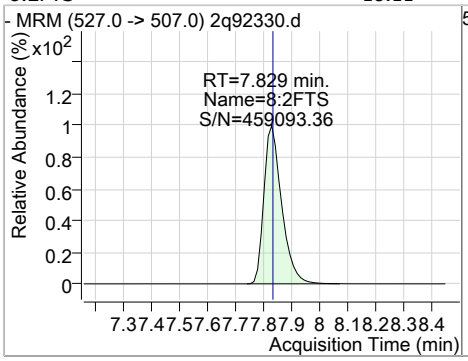
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.43	7.83	0.01	25814				

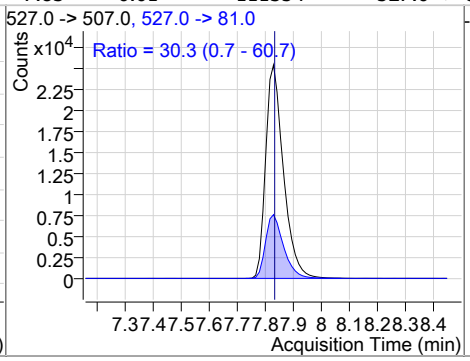


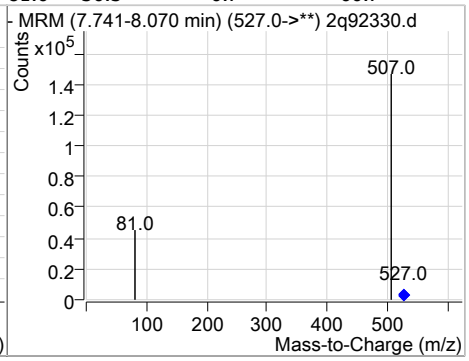




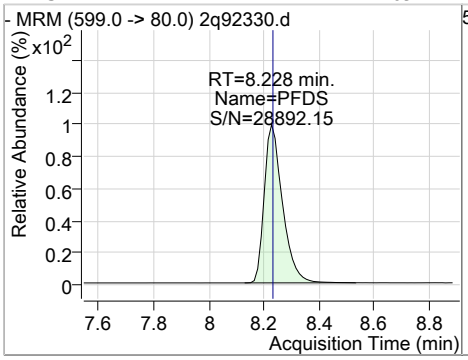
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.11	7.83	0.01	111354	527.0 -> 81.0	30.3	0.7	60.7

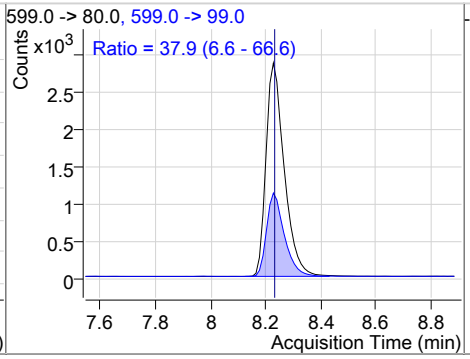


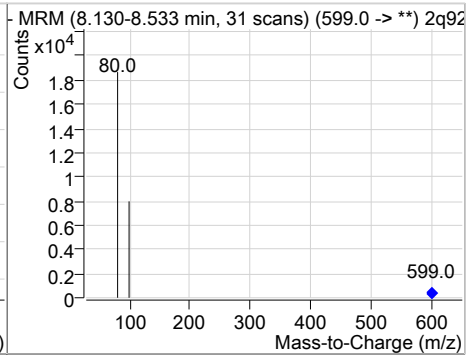




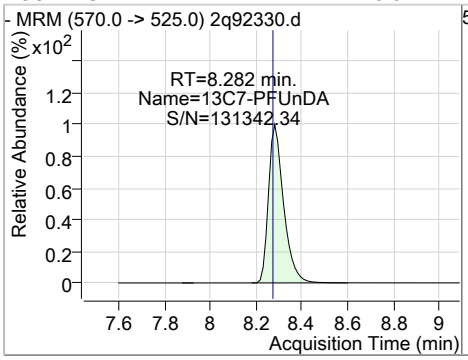
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.09	8.23	0.01	13066	599.0 -> 99.0	37.9	6.6	66.6

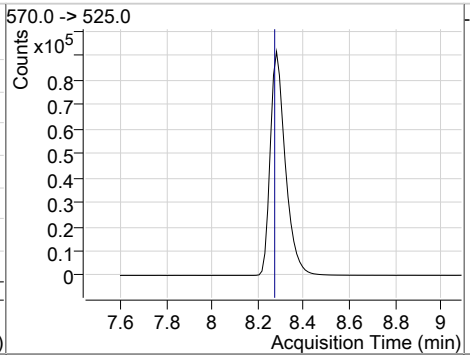


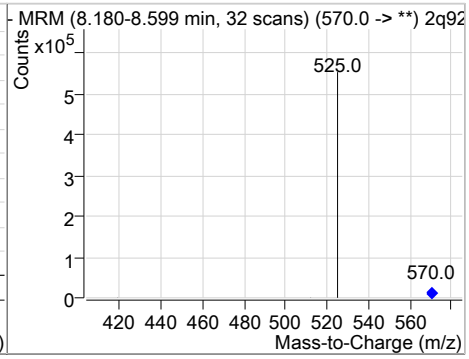




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.52	8.28	0.01	419052				

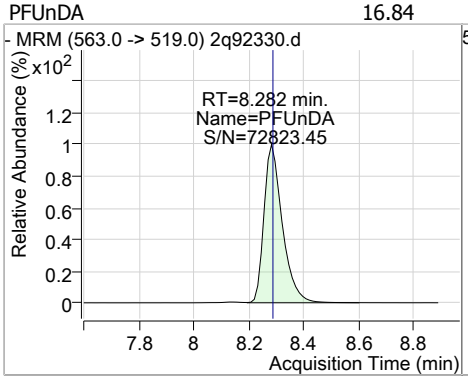


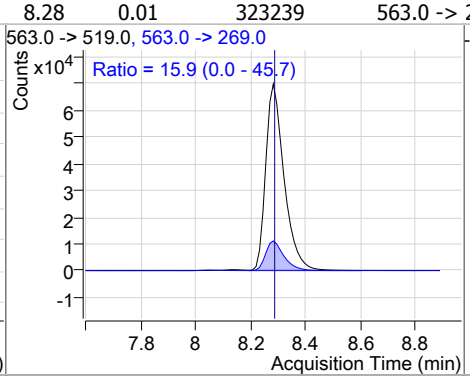


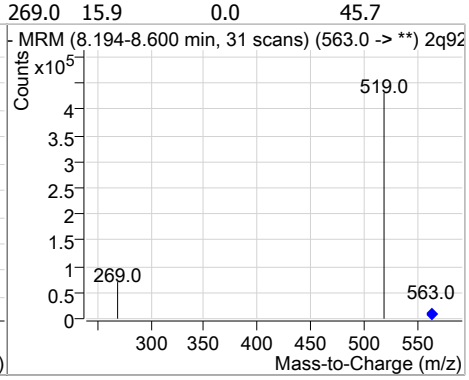


Perfluorinated Compounds by LC/MS/MS

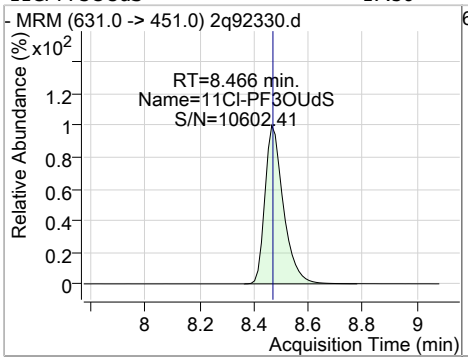
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.84	8.28	0.01	323239	563.0 -> 269.0	15.9	0.0	45.7

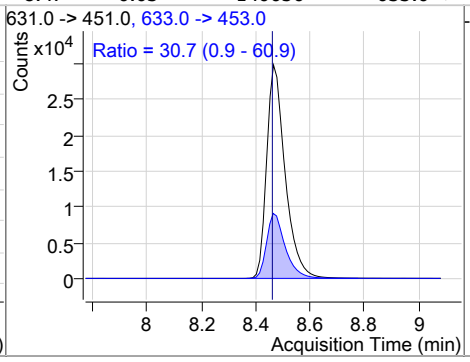


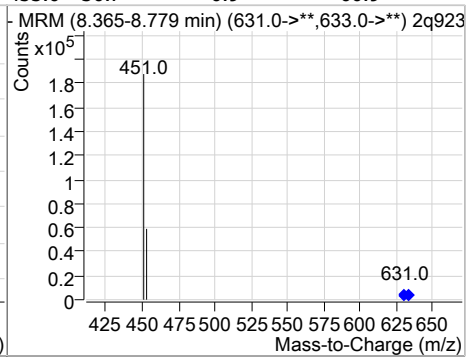




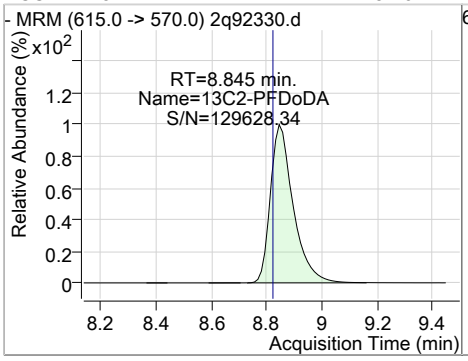
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.56	8.47	0.03	140656	633.0 -> 453.0	30.7	0.9	60.9

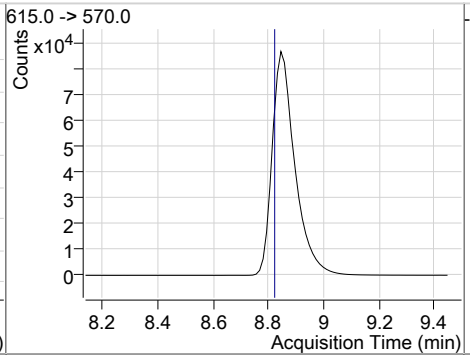


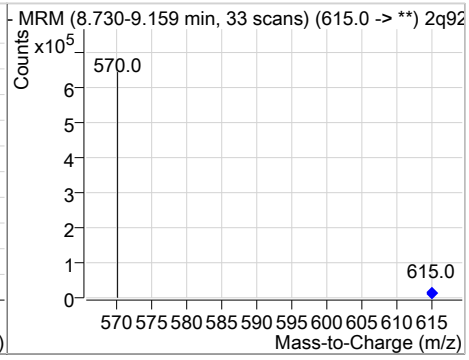




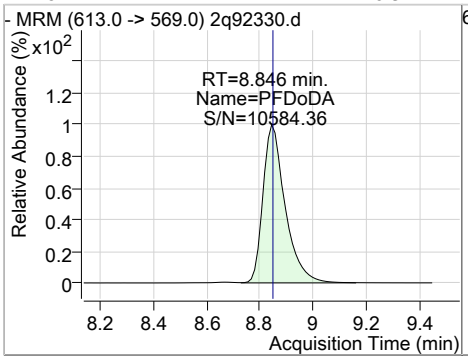
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.40	8.84	0.03	496920				

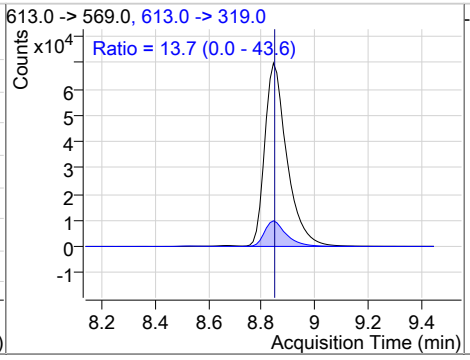


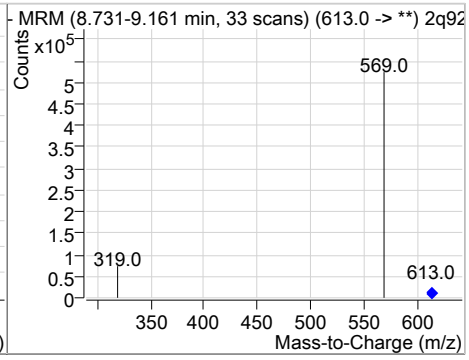




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	16.91	8.85	0.03	403082	613.0 -> 319.0	13.7	0.0	43.6

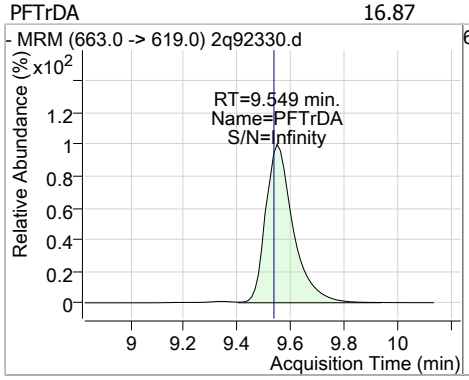


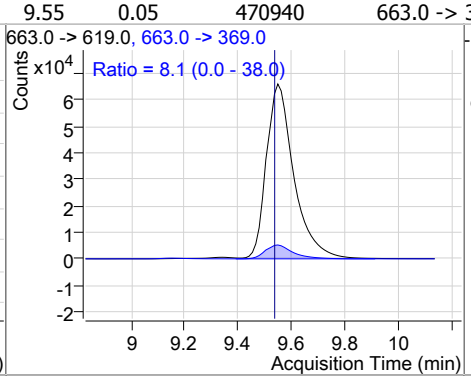


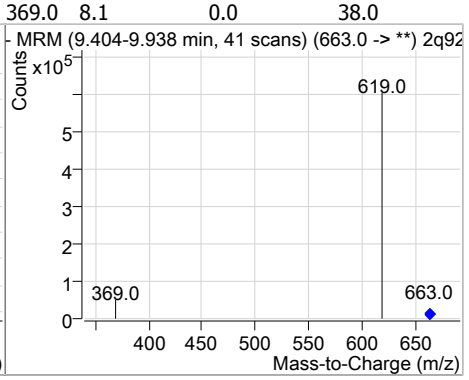


Perfluorinated Compounds by LC/MS/MS

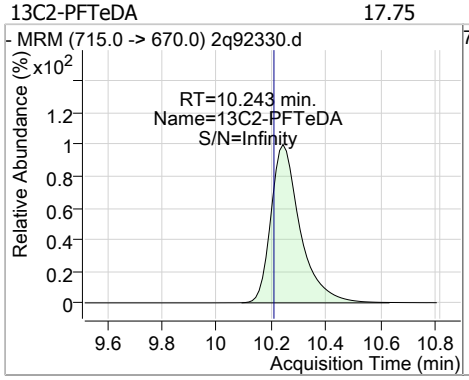
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.87	9.55	0.05	470940	663.0 -> 369.0	8.1	0.0	38.0

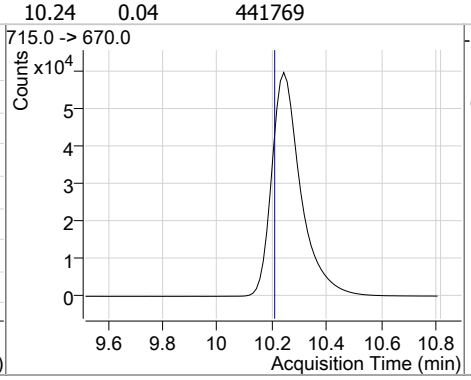


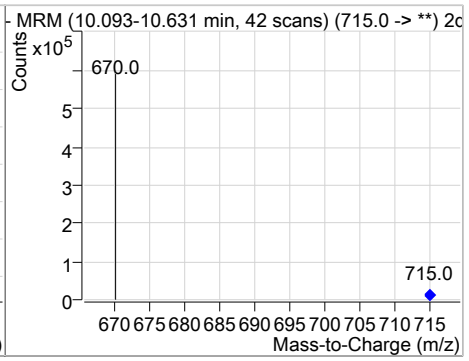




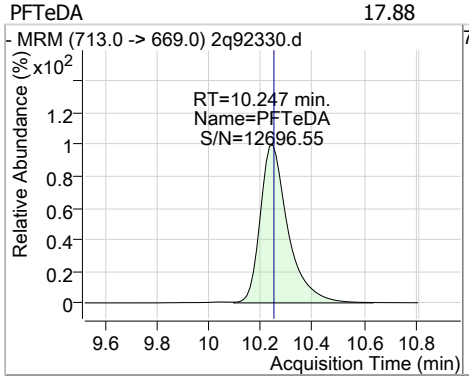
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.75	10.24	0.04	441769				

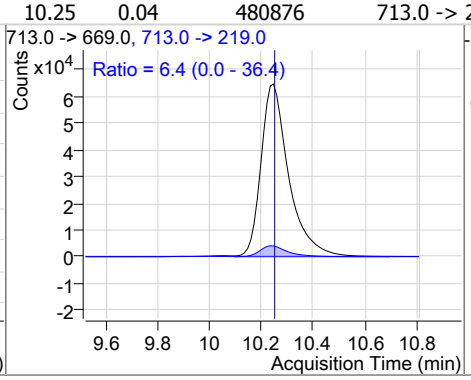


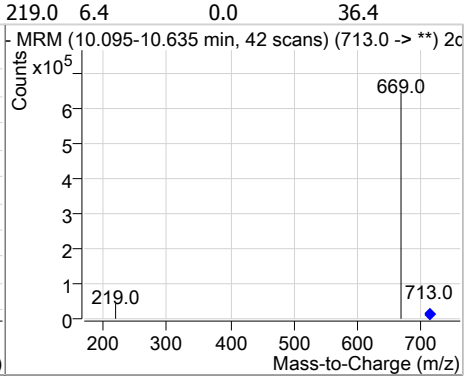




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.88	10.25	0.04	480876	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1293-CC1287
Lab FileID: 2Q92330.D
Injection Time: 06/02/22 22:42
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.62	Split peak
EtFOSAA	2991-50-6		7.76	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/03/22 11:17

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92334.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/2/2022 11:57:50 PM
Sample Name : ecc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1293.batch.bin
Sample Information : op91255,S2Q1293,250,,,1.0,1,water

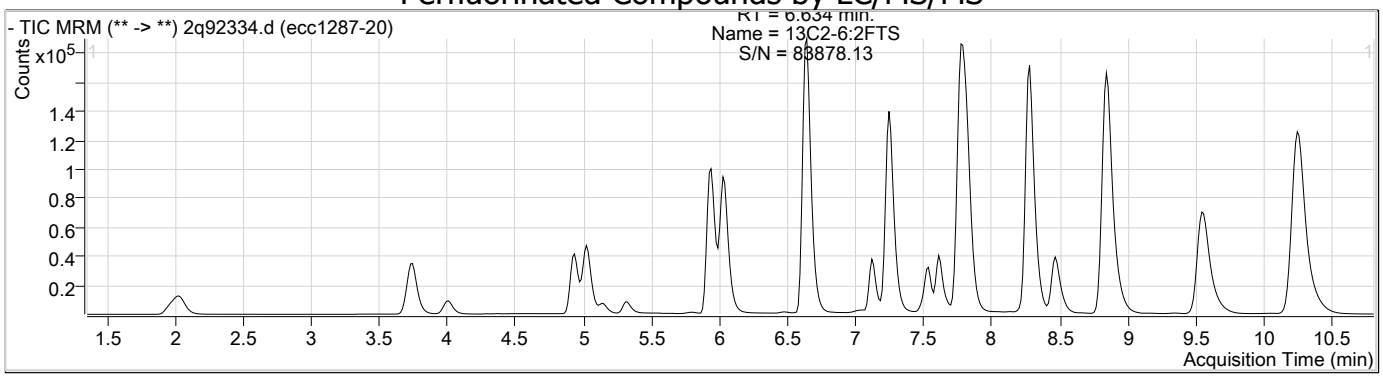
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	55975	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	68526	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	78732	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	117332	20.00	µg/L	0.000
M4-PFHpA	5.941	367.0 -> 322.0	166139	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	227465	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	256536	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	333333	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	414957	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	495816	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	434299	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	68884	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	9136	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	12816	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	18459	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	8234	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	18344	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	25676	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	69350	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4415	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	23623	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8234	17.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.5%		
13C2-6:2FTS	6.634	429.0 -> 81.0	18344	17.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C2-8:2FTS	7.828	529.0 -> 81.0	25676	17.34	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%		
13C2-PFDoDA	8.845	615.0 -> 570.0	495816	18.36	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%		
13C2-PFTeDA	10.243	715.0 -> 670.0	434299	17.45	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.2%		
13C3-PFBS	4.004	302.0 -> 99.0	9136	17.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%		
13C3-PFHxS	5.967	402.0 -> 99.0	12816	17.98	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.9%		
13C4-PFBA	2.027	217.0 -> 172.0	68526	17.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C4-PFHpA	5.941	367.0 -> 322.0	166139	17.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%		
d5-EtFOSAA	7.748	589.0 -> 419.0	55975	18.44	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C5-PFHxA	5.027	318.0 -> 273.0	117332	17.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%		
13C5-PFPeA	3.749	268.0 -> 223.0	78732	17.27	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

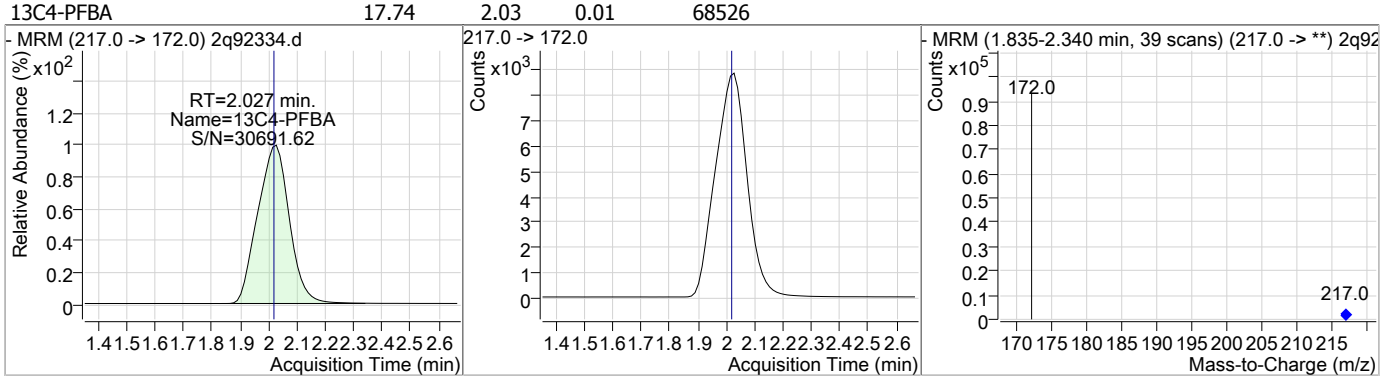
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.4%			
13C6-PFDA	7.779	519.0 -> 474.0	333333	18.30	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.5%			
13C7-PFUnDA	8.282	570.0 -> 525.0	414957	18.34	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.7%			
13C8-FOSA	7.124	506.0 -> 78.0	68884	18.72	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%			
13C8-PFOA	6.649	421.0 -> 376.0	227465	17.67	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.3%			
13C8-PFOS	7.225	507.0 -> 99.0	18459	17.79	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%			
13C9-PFNA	7.252	472.0 -> 427.0	256536	17.59	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%			
d3-MeFOSAA	7.610	573.0 -> 419.0	69350	18.08	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.4%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4415	16.95	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%			
d3-MeFOSA	7.539	515.0 -> 169.0	23623	16.88	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	73663	17.08	µg/L		99
6:2FTS	6.635	427.0 -> 407.0	118470	17.52	µg/L		99
8:2FTS	7.829	527.0 -> 507.0	112548	18.40	µg/L		99
EtFOSAA	7.748	584.0 -> 419.0	49155	17.63	µg/L	m	100
FOSA	7.125	498.0 -> 78.0	61838	17.09	µg/L		99
MeFOSAA	7.611	570.0 -> 419.0	55974	17.57	µg/L	m	100
PFBA	2.021	213.0 -> 169.0	29599	16.84	µg/L		100
PFBS	4.007	299.0 -> 80.0	26481	17.38	µg/L		100
PFDA	7.780	513.0 -> 469.0	284750	16.86	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	405486	17.05	µg/L		100
PFDS	8.228	599.0 -> 80.0	13049	17.24	µg/L		98
PFHpA	5.930	363.0 -> 319.0	238317	17.55	µg/L		99
PFHpS	6.645	449.0 -> 80.0	27090	17.99	µg/L		97
PFHxA	5.028	313.0 -> 269.0	74326	17.12	µg/L		98
PFHxS	5.967	399.0 -> 80.0	28524	17.73	µg/L	m	98
PFNA	7.252	463.0 -> 419.0	255553	17.92	µg/L		99
PFNS	7.751	549.0 -> 80.0	23035	17.72	µg/L		97
PFOA	6.649	413.0 -> 369.0	216228	17.50	µg/L		99
PFOS	7.225	499.0 -> 80.0	28740	17.79	µg/L	m	98
PFPeA	3.751	263.0 -> 219.0	109714	18.10	µg/L		100
PFPeS	5.145	349.0 -> 80.0	18543	17.80	µg/L		100
PFTeDA	10.247	713.0 -> 669.0	474903	17.96	µg/L		100
PFTrDA	9.549	663.0 -> 619.0	470429	16.89	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	321494	16.92	µg/L		100
11Cl-PF3OUdS	8.466	631.0 -> 451.0	140100	17.53	µg/L		99
9Cl-PF3ONS	7.511	531.0 -> 351.0	29504	16.34	µg/L		97
ADONA	6.032	377.0 -> 251.0	295623	17.29	µg/L		100
HFPO-DA	5.314	329.0 -> 169.0	28123	17.67	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	18539	18.61	µg/L		99

= Qualifier out of range, m = manually integrated, + = Area summed

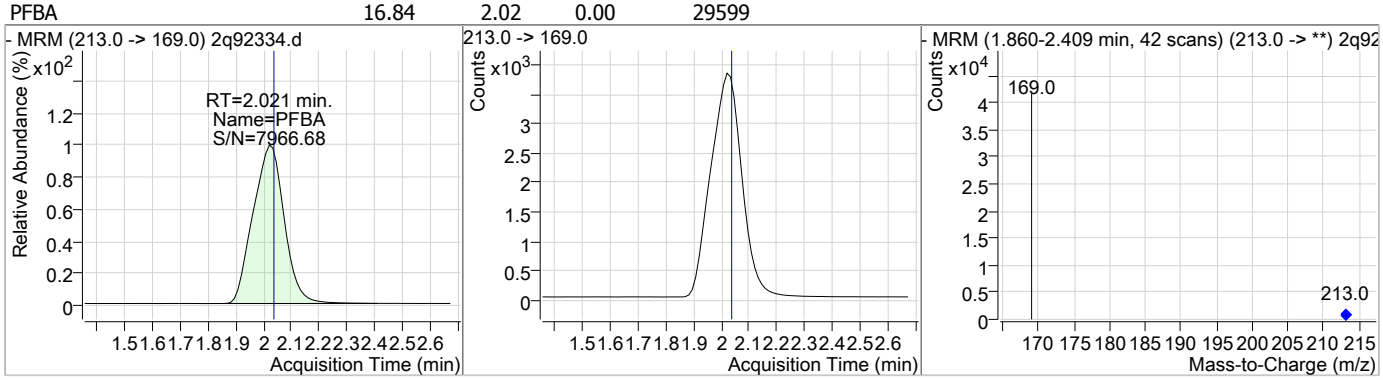
Perfluorinated Compounds by LC/MS/MS



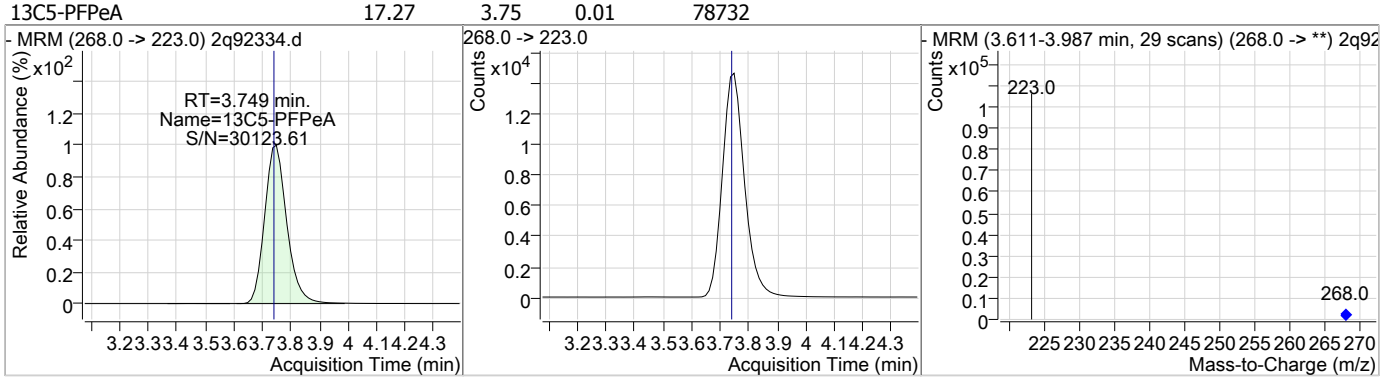
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.74	2.03	0.01	68526				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	16.84	2.02	0.00	29599				

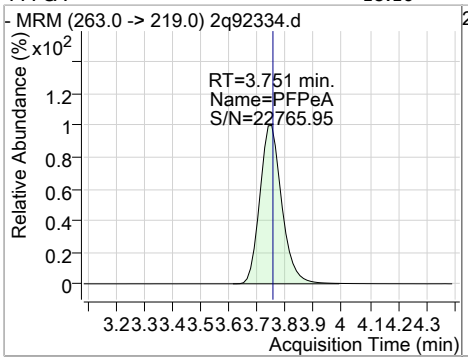


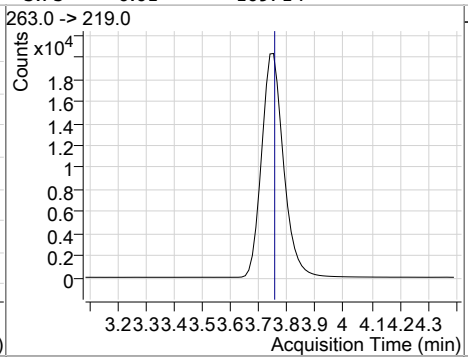
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.27	3.75	0.01	78732				

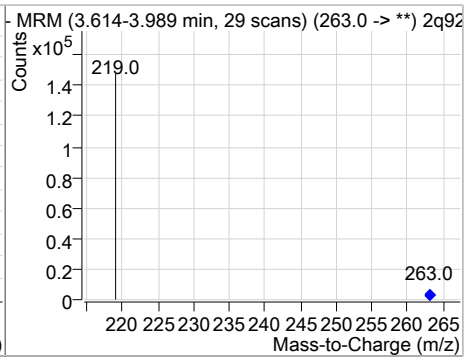


Perfluorinated Compounds by LC/MS/MS

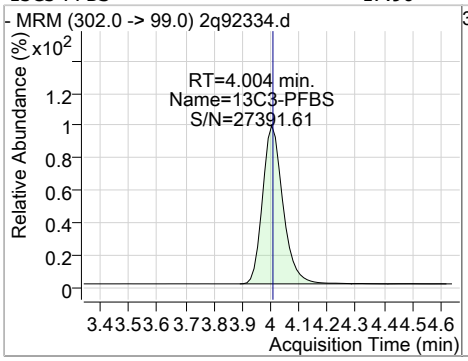
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.10	3.75	0.01	109714				

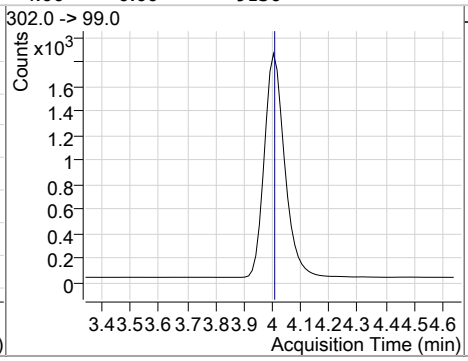


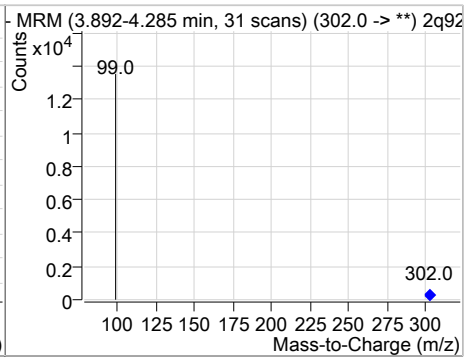




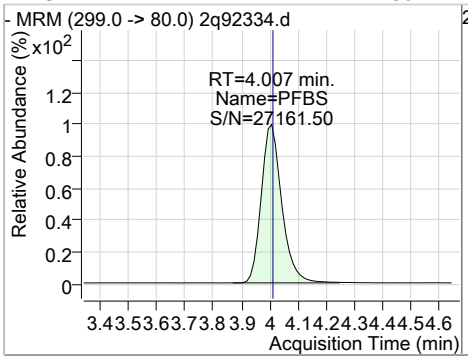
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.96	4.00	0.00	9136				

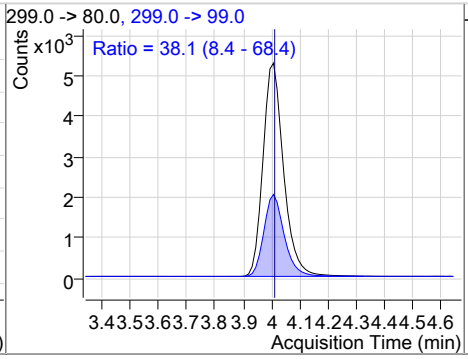


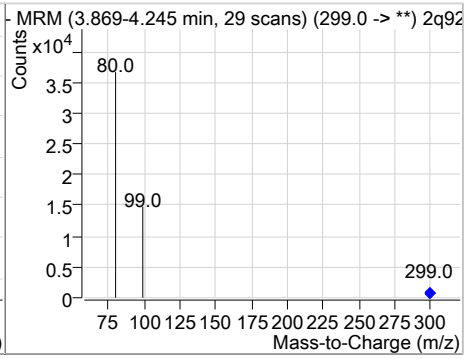




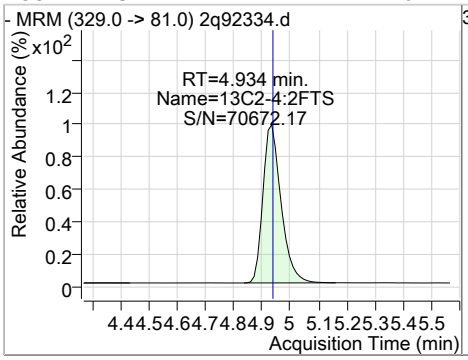
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.38	4.01	0.00	26481	299.0 -> 99.0	38.1	8.4	68.4

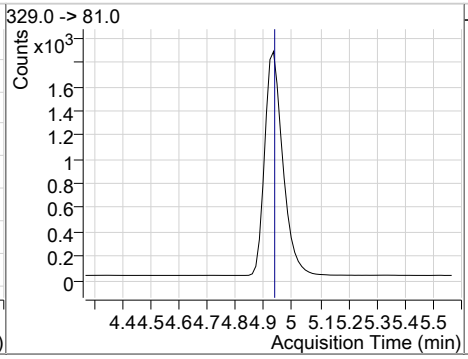


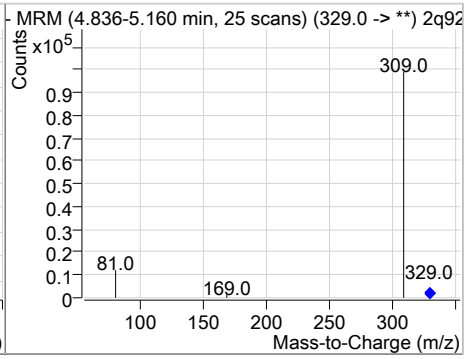




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.70	4.93	0.00	8234				

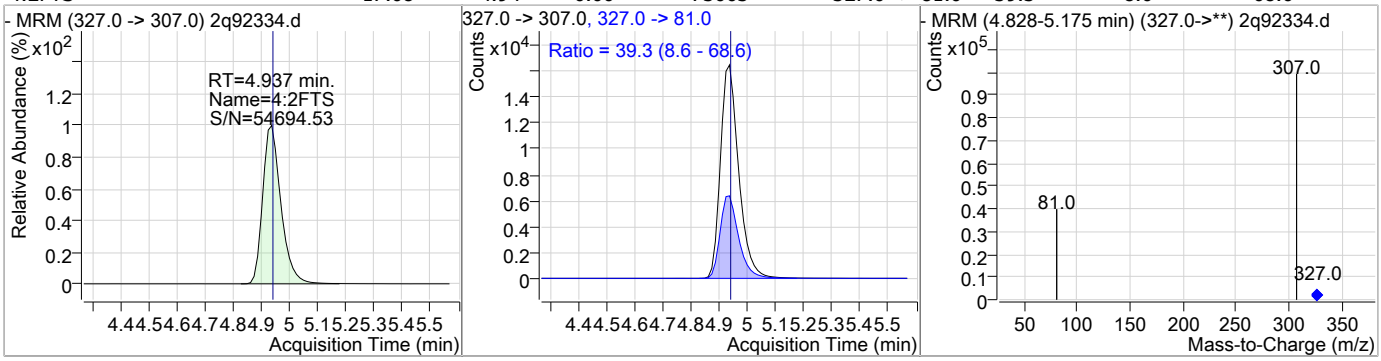




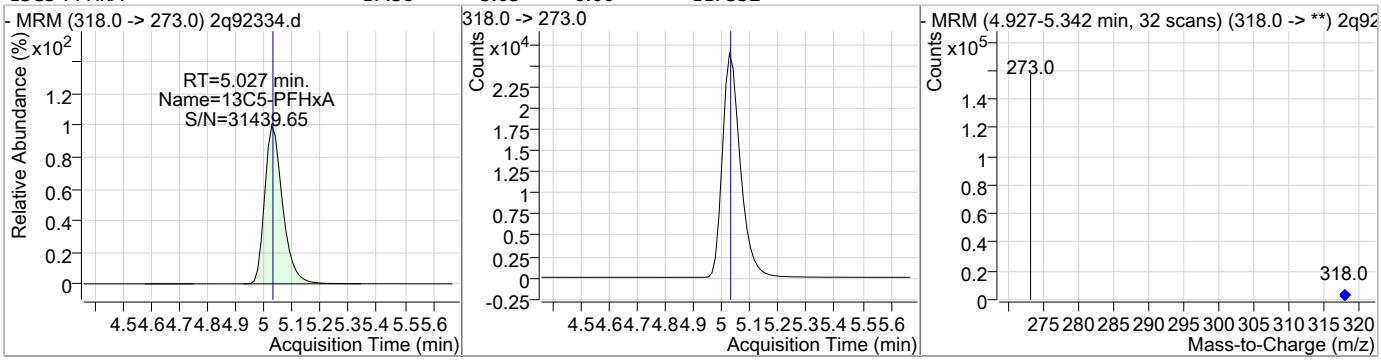


Perfluorinated Compounds by LC/MS/MS

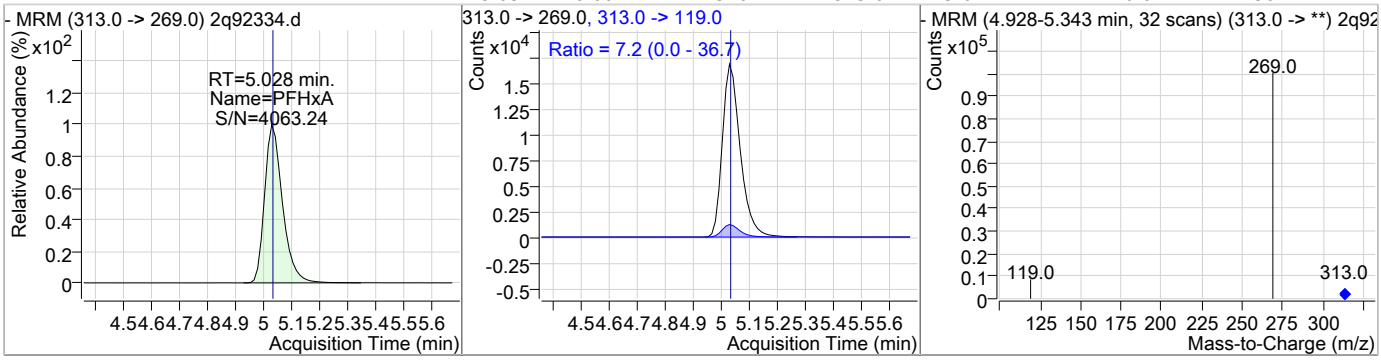
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	17.08	4.94	0.00	73663	327.0 -> 81.0	39.3	8.6	68.6



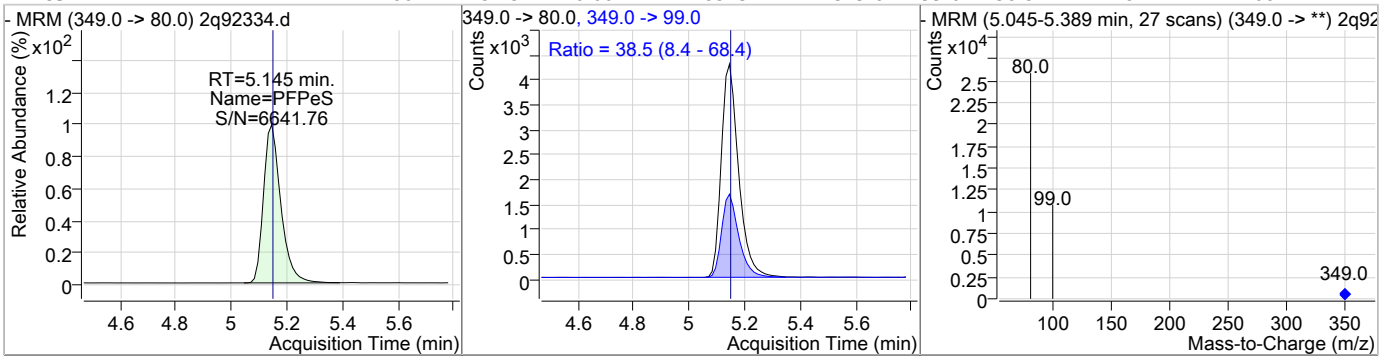
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.38	5.03	0.00	117332				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.12	5.03	0.00	74326	313.0 -> 119.0	7.2	0.0	36.7

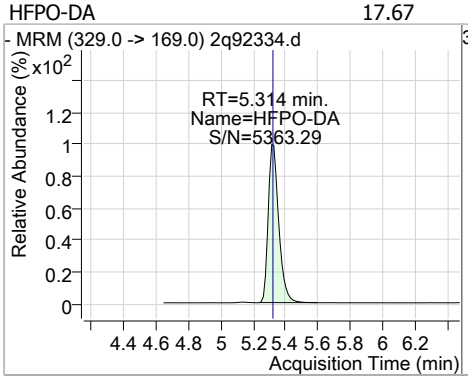


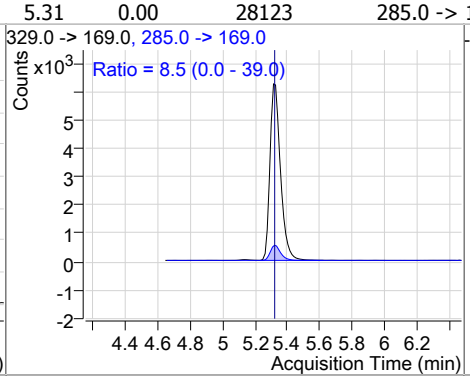
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.80	5.15	0.00	18543	349.0 -> 99.0	38.5	8.4	68.4

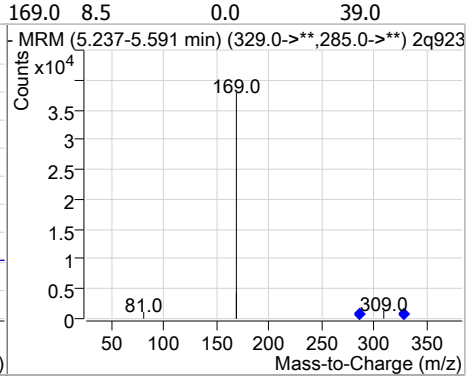


Perfluorinated Compounds by LC/MS/MS

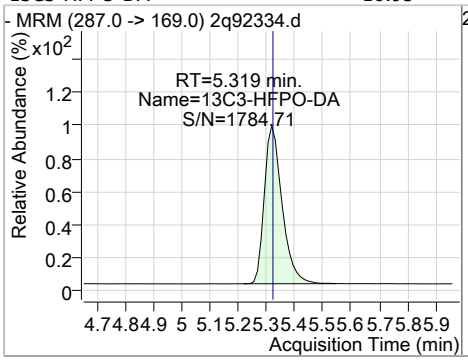
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	17.67	5.31	0.00	28123	285.0 -> 169.0	8.5	0.0	39.0

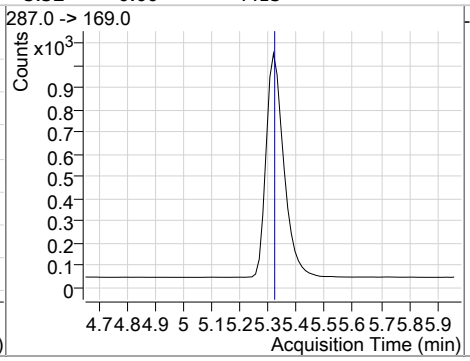


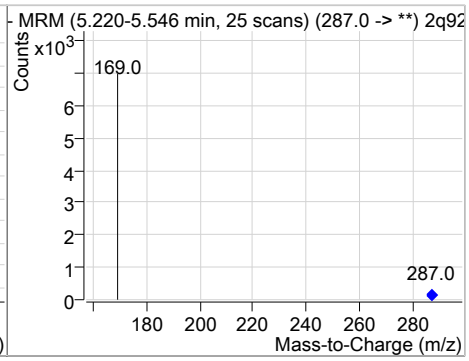




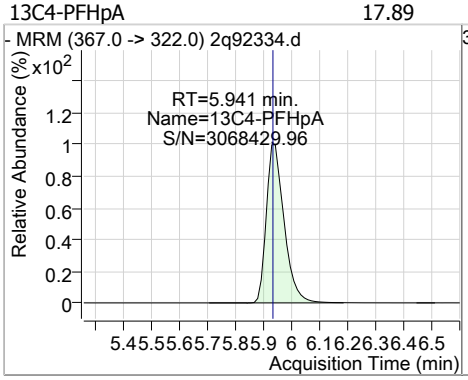
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	16.95	5.32	0.00	4415				

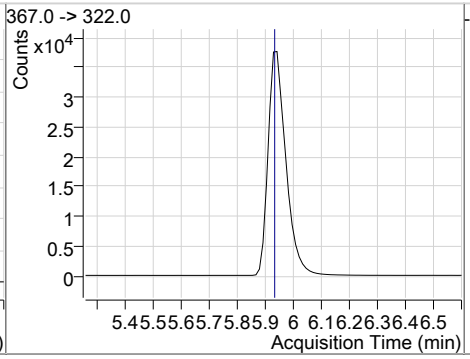


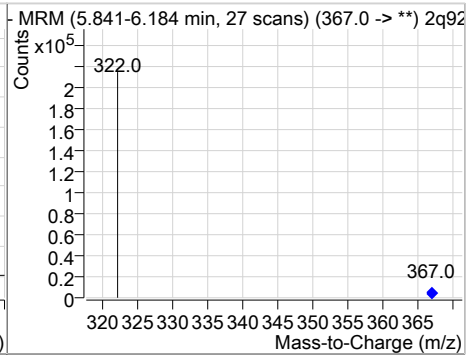




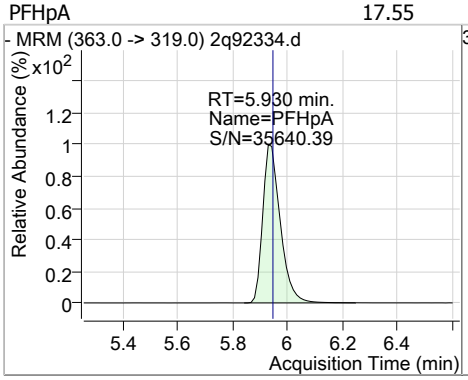
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.89	5.94	0.01	166139				

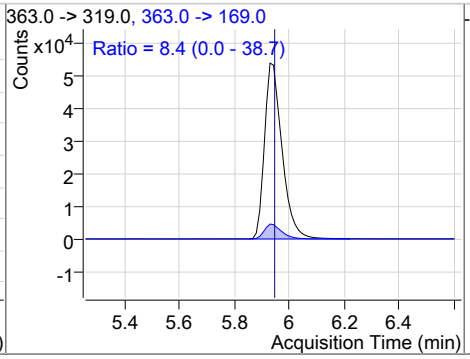


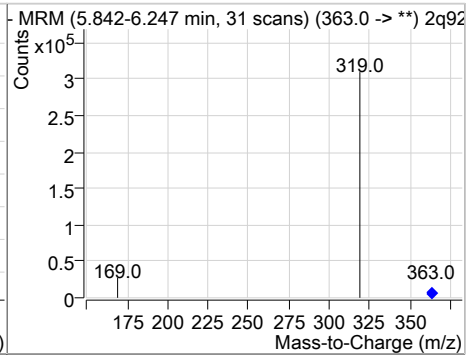




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.55	5.93	0.00	238317	363.0 -> 169.0	8.4	0.0	38.7

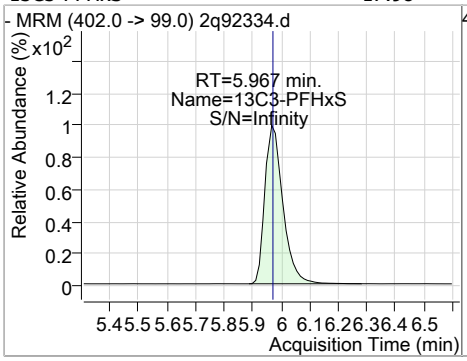


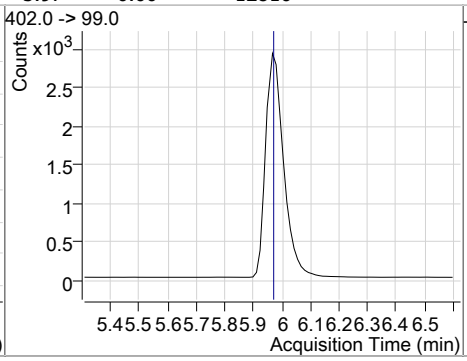


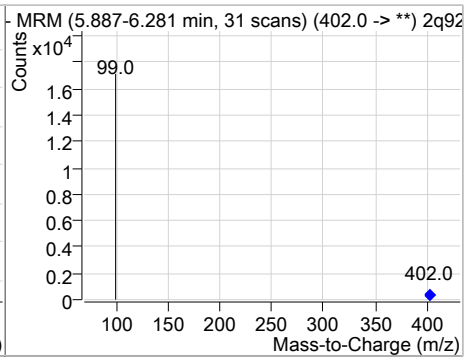


Perfluorinated Compounds by LC/MS/MS

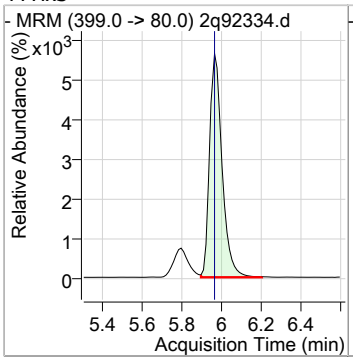
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.98	5.97	0.00	12816				

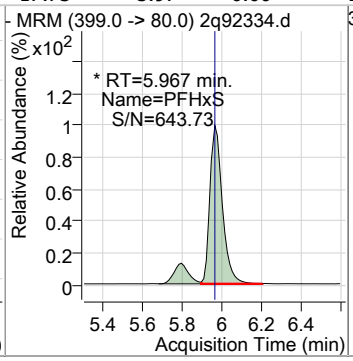


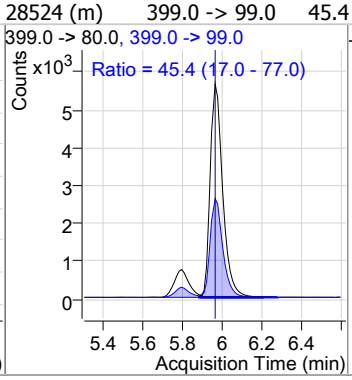


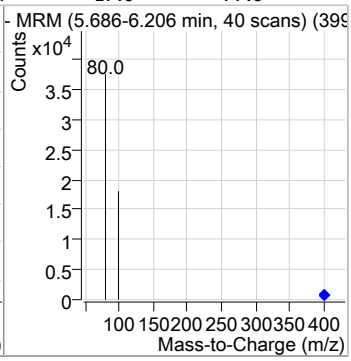


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.73	5.97	0.00	28524 (m)	399.0 -> 99.0	45.4	17.0	77.0

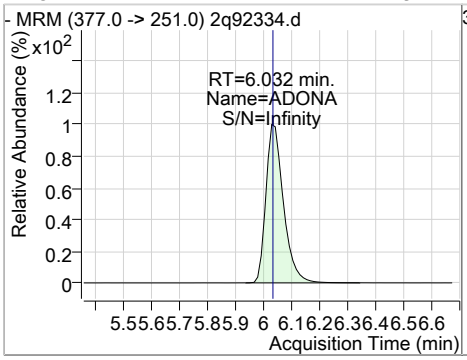


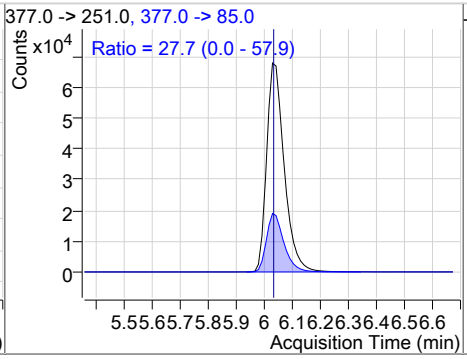


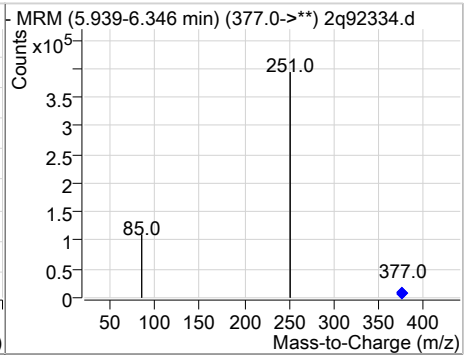




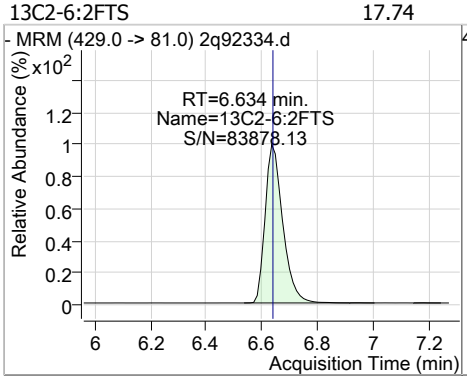
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	17.29	6.03	0.00	295623	377.0 -> 85.0	27.7	0.0	57.9

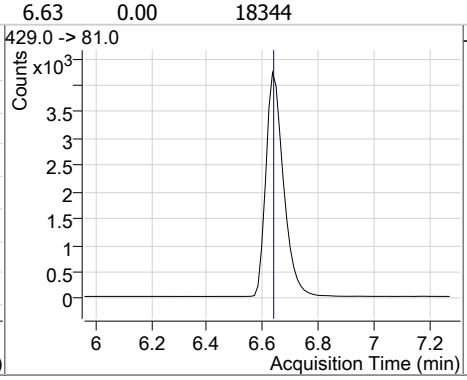


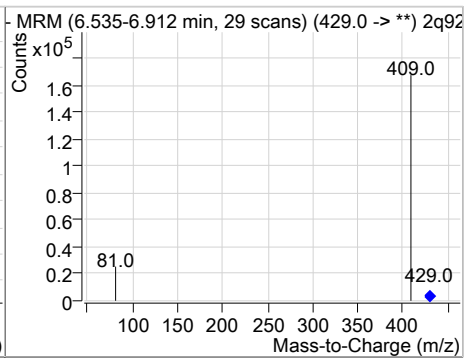




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.74	6.63	0.00	18344				

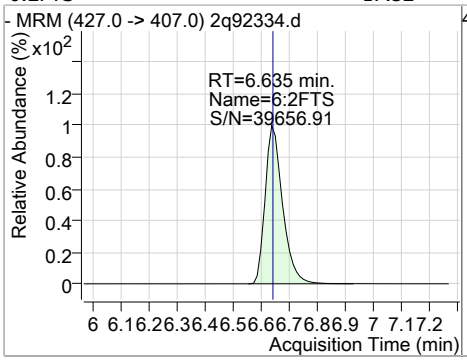


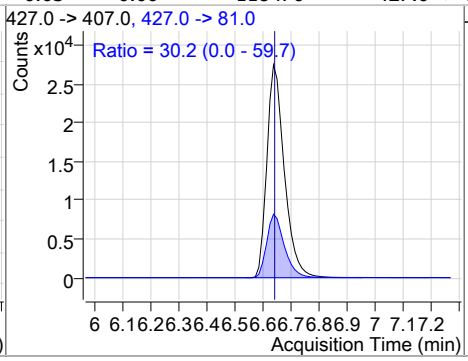


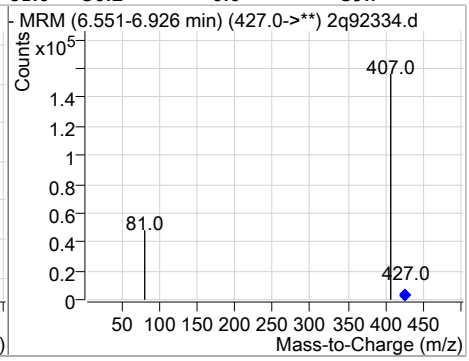


Perfluorinated Compounds by LC/MS/MS

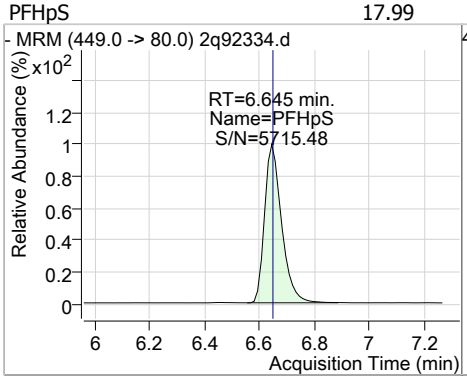
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.52	6.63	0.00	118470	427.0 -> 81.0	30.2	0.0	59.7

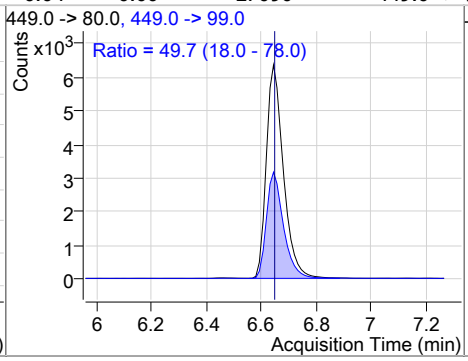


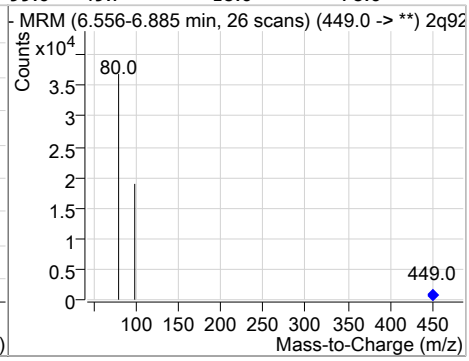




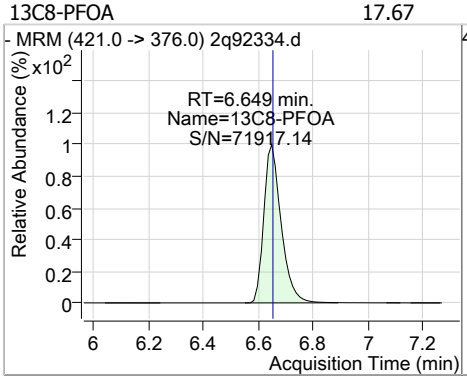
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.99	6.64	0.00	27090	449.0 -> 99.0	49.7	18.0	78.0

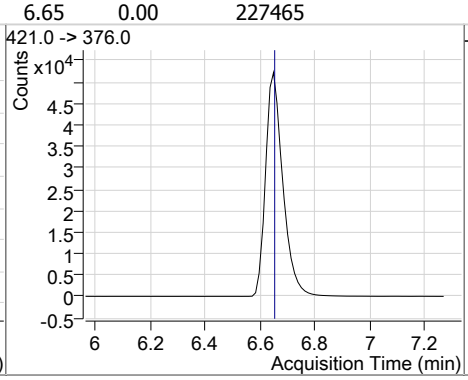


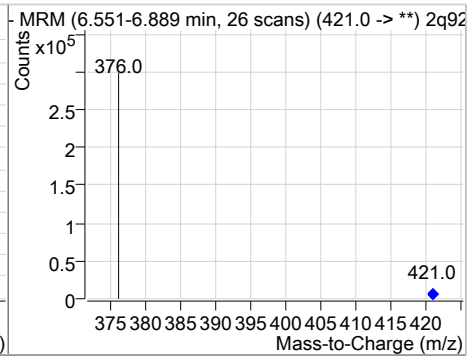




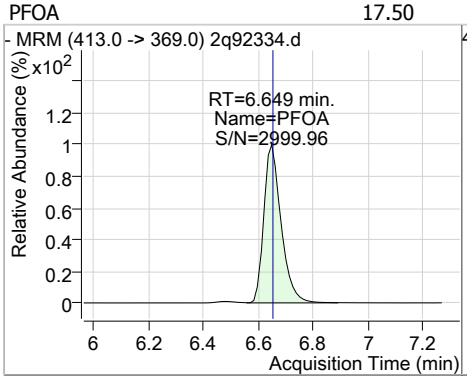
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.67	6.65	0.00	227465				

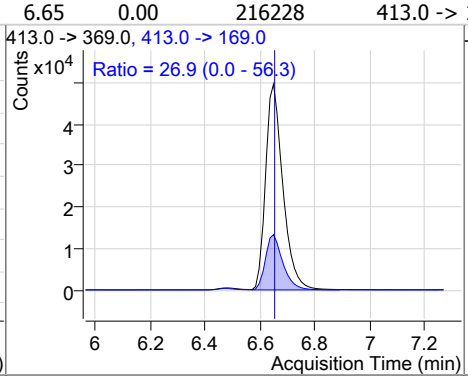


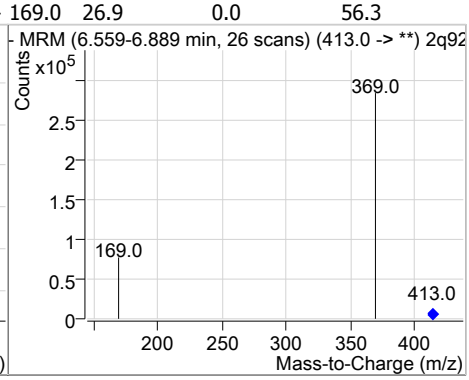




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.50	6.65	0.00	216228	413.0 -> 169.0	26.9	0.0	56.3

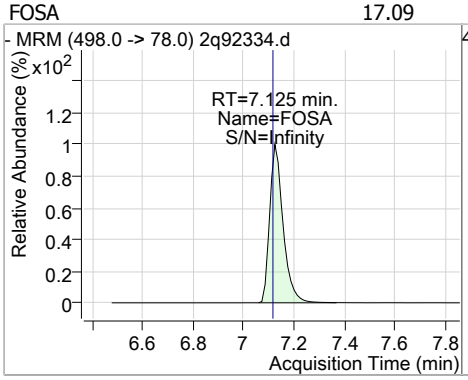


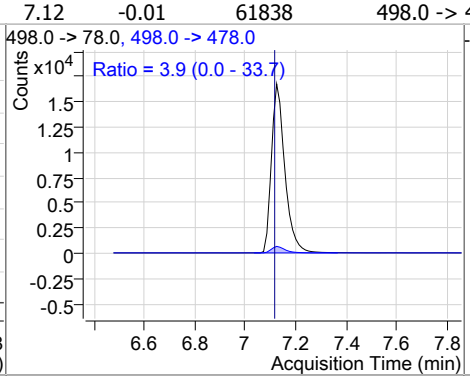


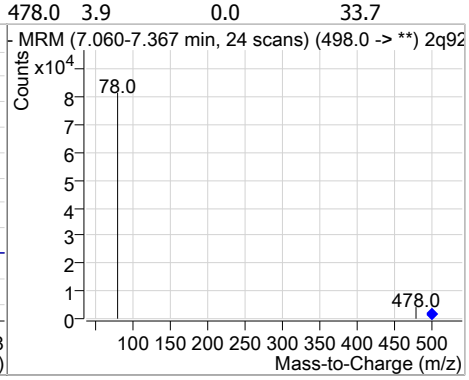


Perfluorinated Compounds by LC/MS/MS

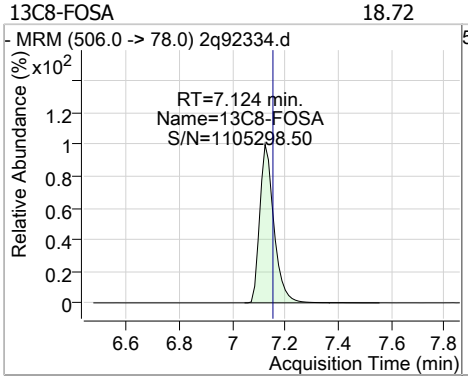
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.09	7.12	-0.01	61838	498.0 -> 478.0	3.9	0.0	33.7

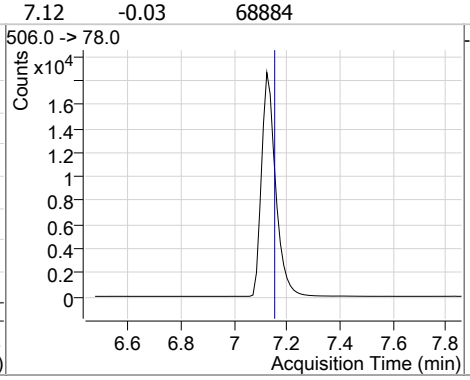


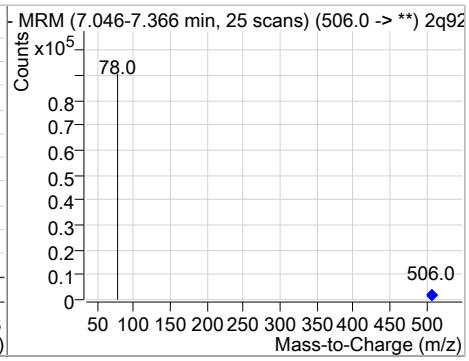




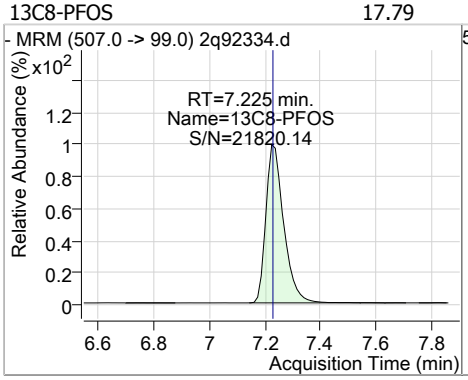
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.72	7.12	-0.03	68884				

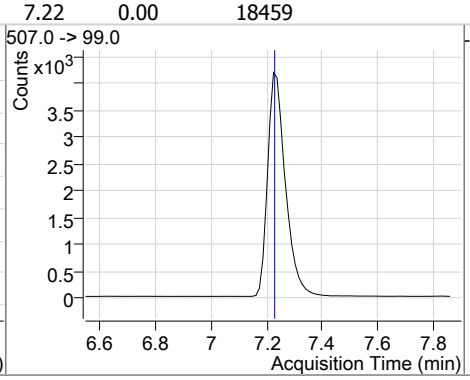


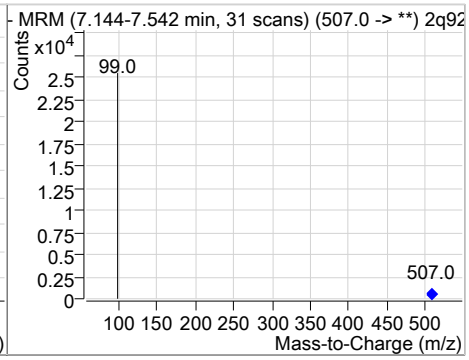




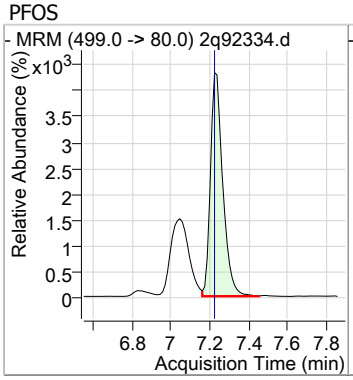
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.79	7.22	0.00	18459				

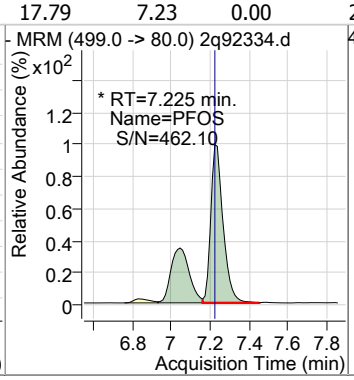


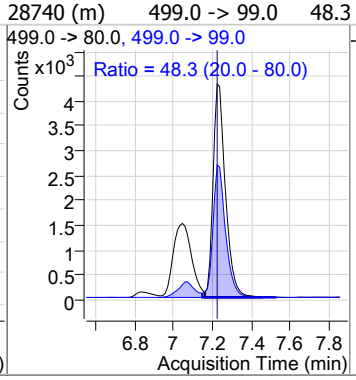


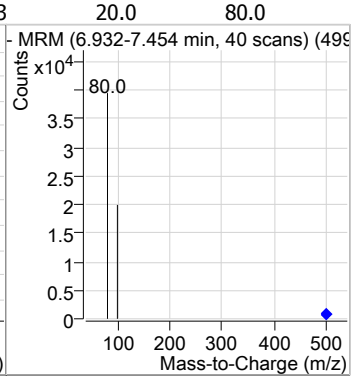


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.79	7.23	0.00	28740 (m)	499.0 -> 99.0	48.3	20.0	80.0



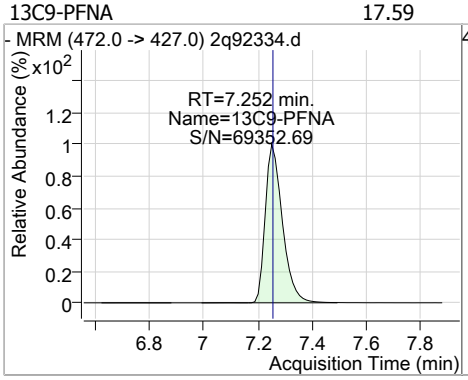


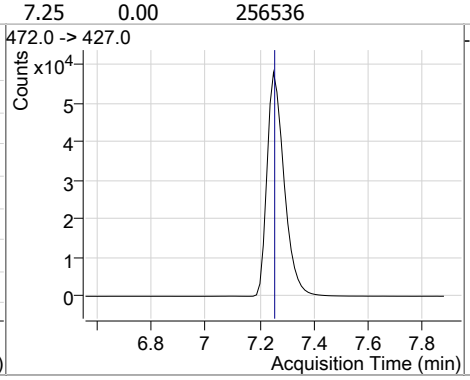


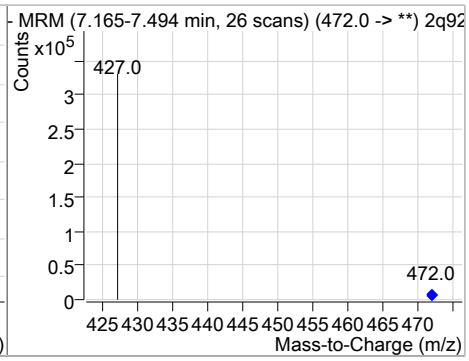


Perfluorinated Compounds by LC/MS/MS

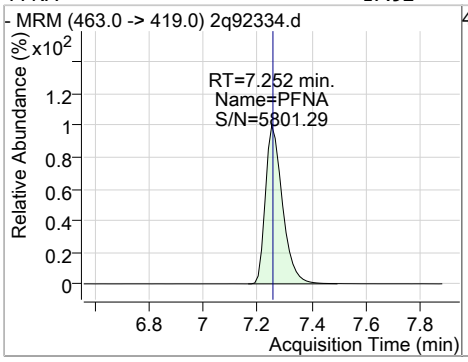
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.59	7.25	0.00	256536				

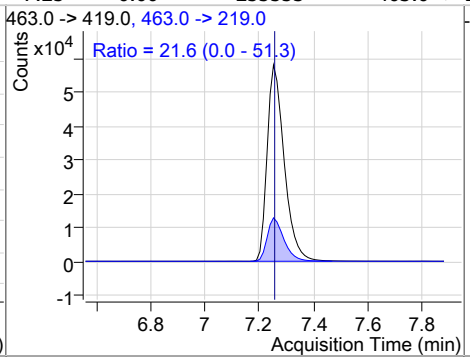


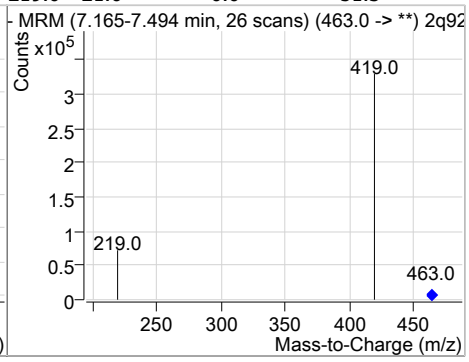




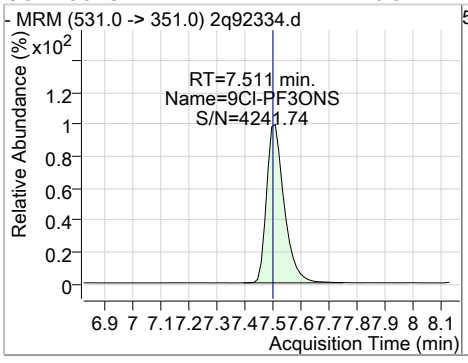
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.92	7.25	0.00	255553	463.0 -> 219.0	21.6	0.0	51.3

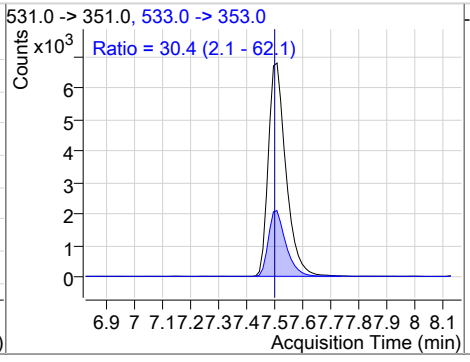


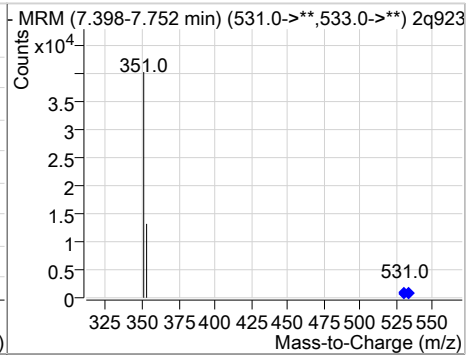




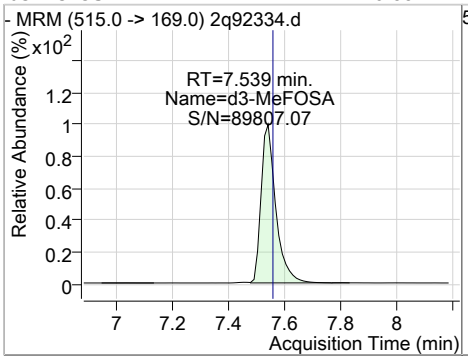
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.34	7.51	0.01	29504	533.0 -> 353.0	30.4	2.1	62.1

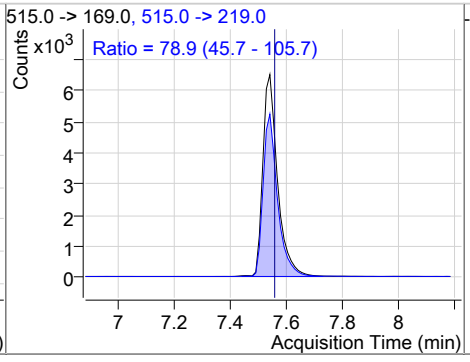


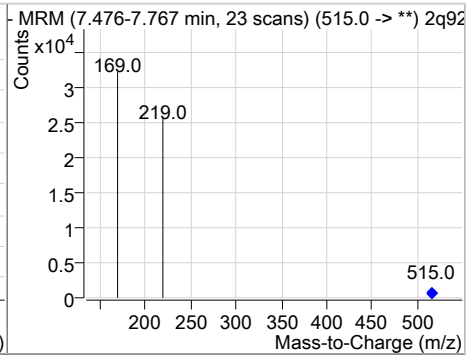




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	16.88	7.54	-0.01	23623	515.0 -> 219.0	78.9	45.7	105.7

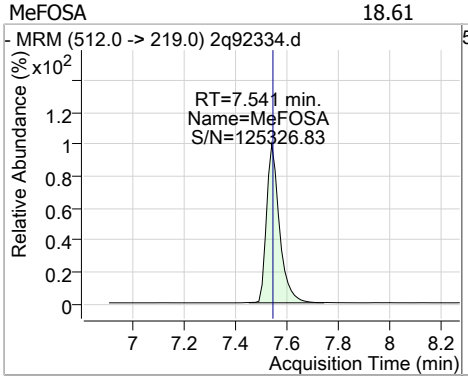


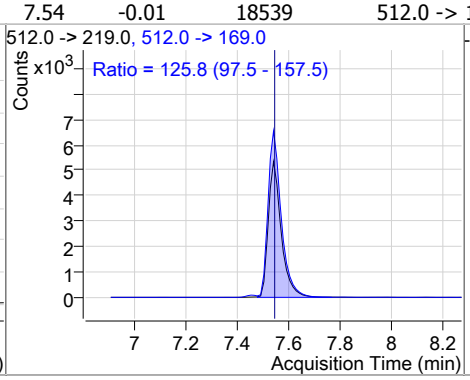


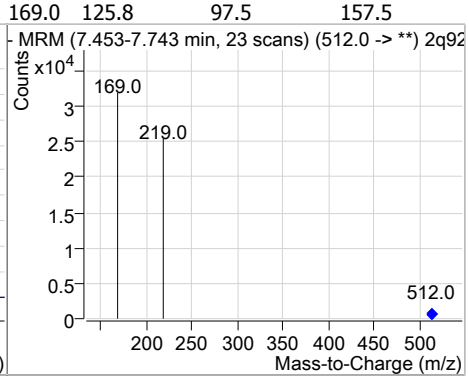


Perfluorinated Compounds by LC/MS/MS

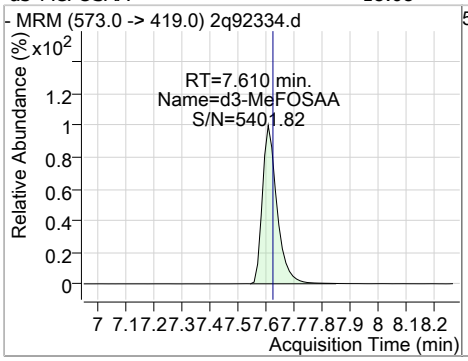
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.61	7.54	-0.01	18539	512.0 -> 169.0	125.8	97.5	157.5

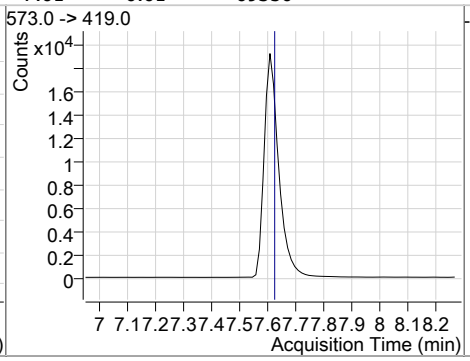


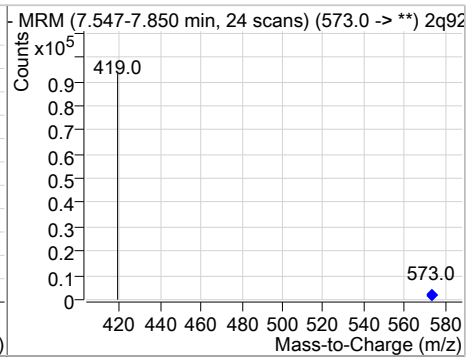




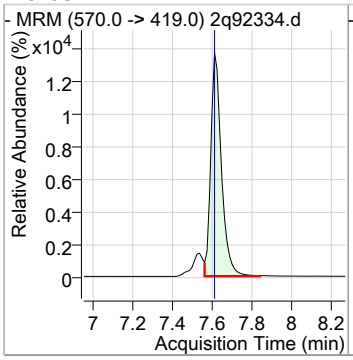
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.08	7.61	-0.01	69350				

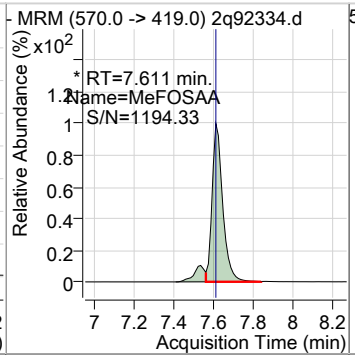


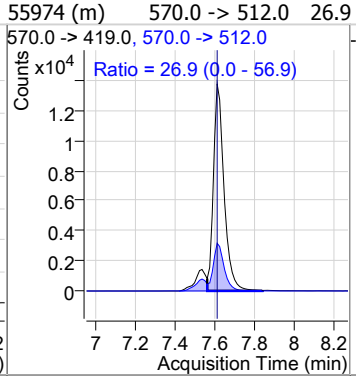


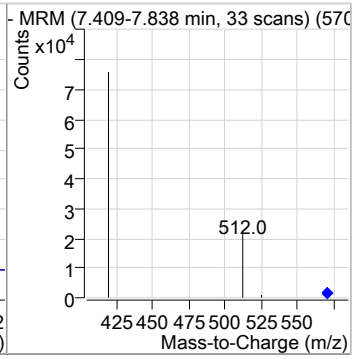


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.57	7.61	-0.01	55974 (m)	570.0 -> 512.0	26.9	0.0	56.9

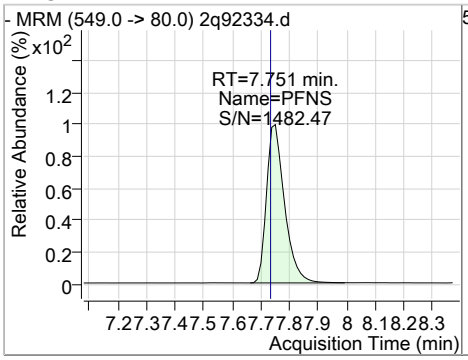


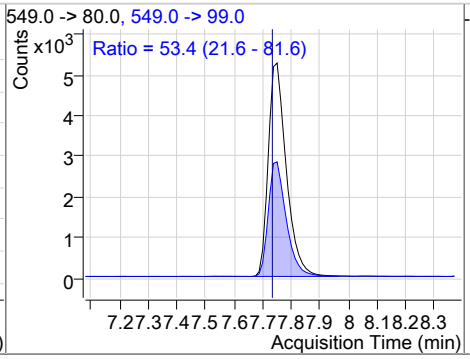


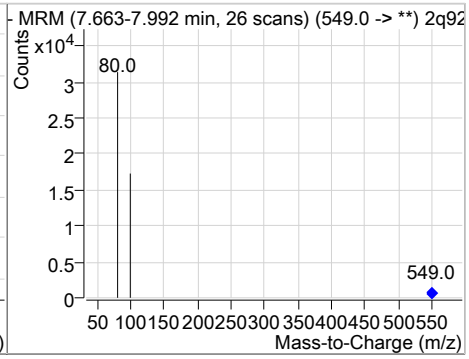




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.72	7.75	0.01	23035	549.0 -> 99.0	53.4	21.6	81.6

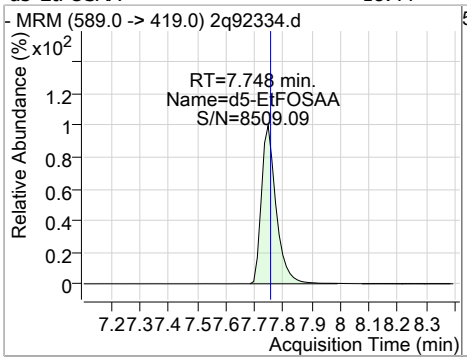


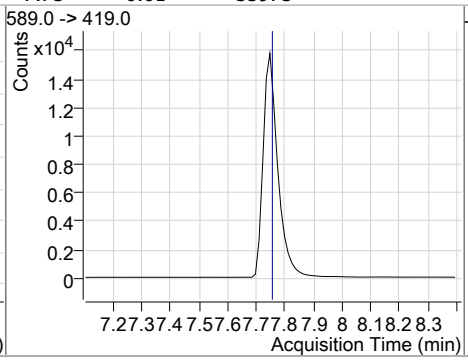


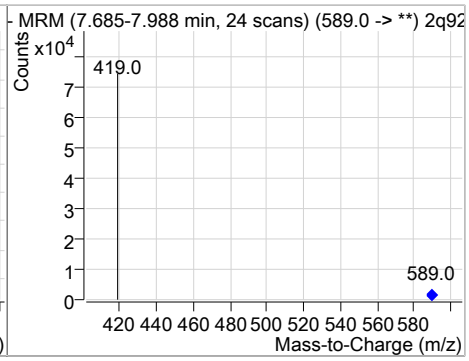


Perfluorinated Compounds by LC/MS/MS

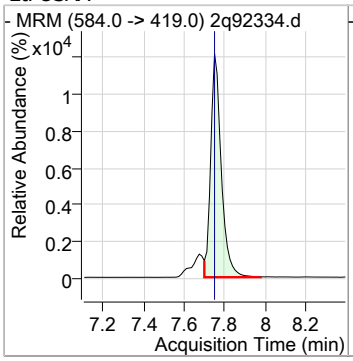
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.44	7.75	-0.01	55975				

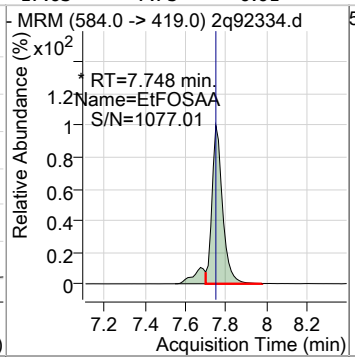


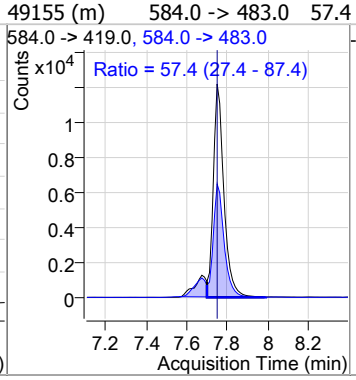


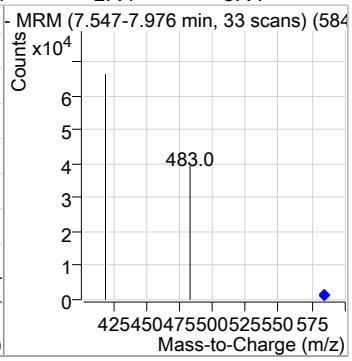


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.63	7.75	-0.01	49155 (m)	584.0 -> 483.0	57.4	27.4	87.4

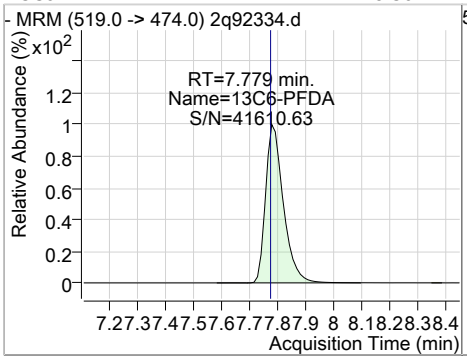


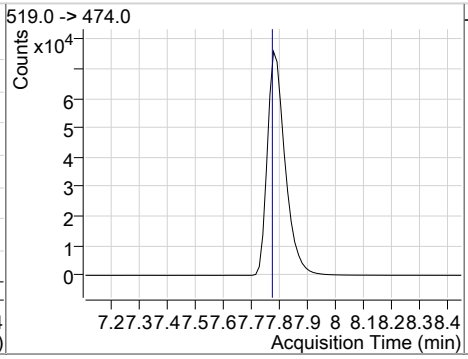


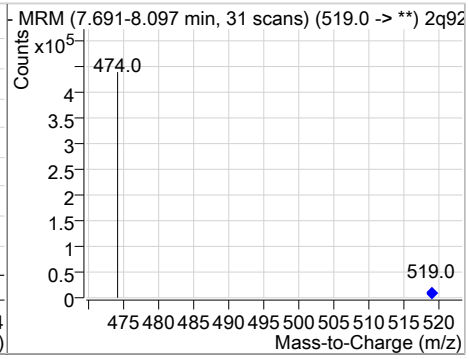




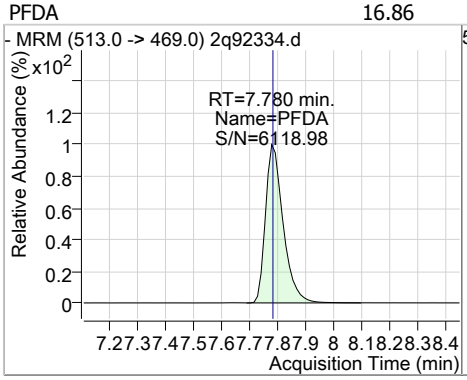
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.30	7.78	0.00	333333				

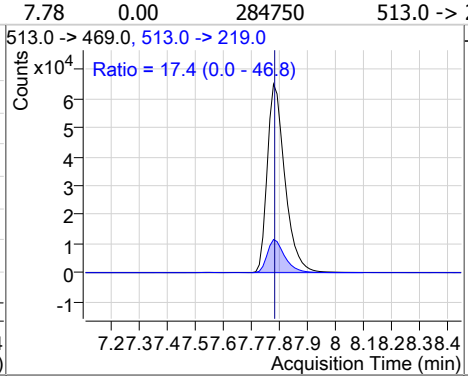


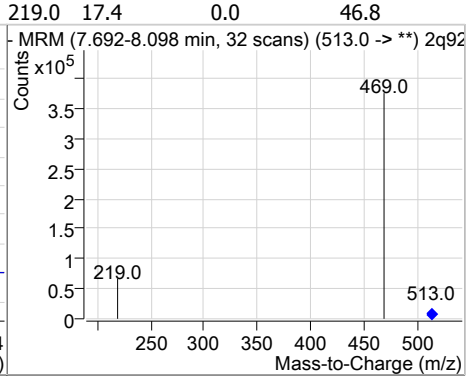




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	16.86	7.78	0.00	284750	513.0 -> 219.0	17.4	0.0	46.8

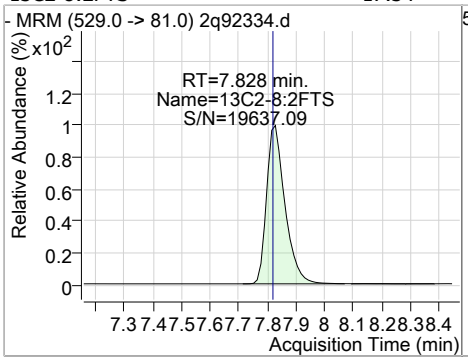


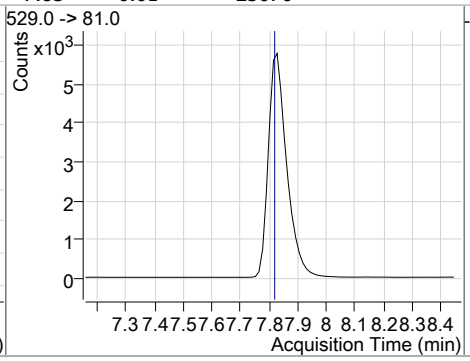


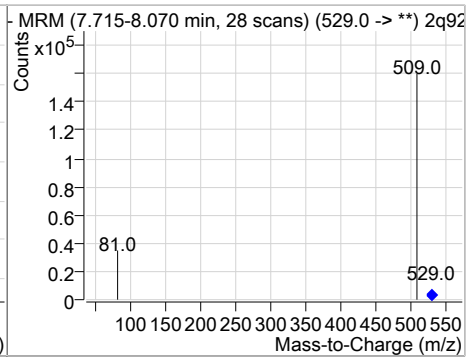


Perfluorinated Compounds by LC/MS/MS

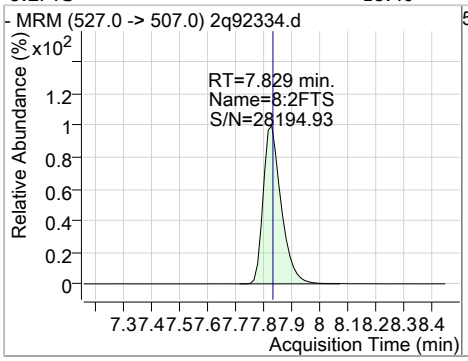
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.34	7.83	0.01	25676				

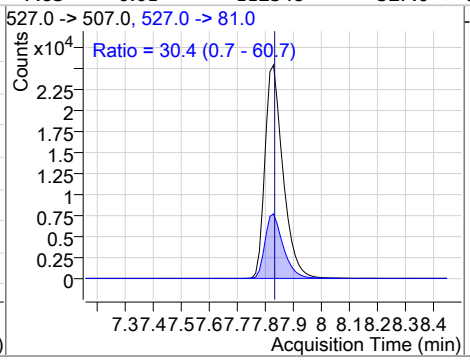


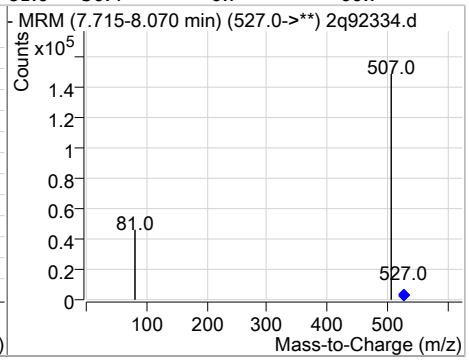




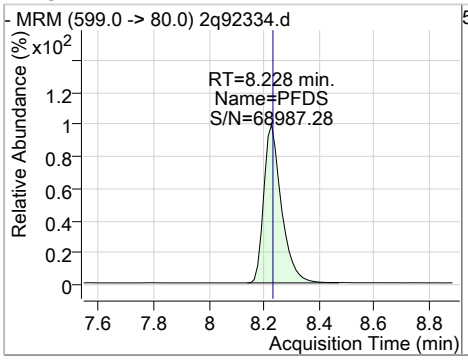
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.40	7.83	0.01	112548	527.0 -> 81.0	30.4	0.7	60.7

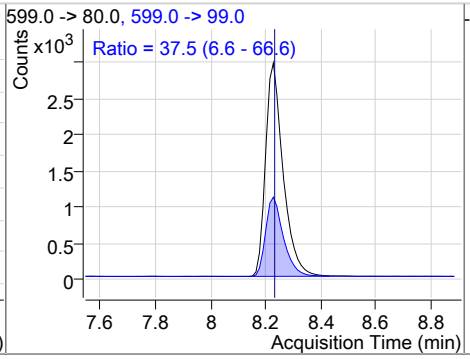


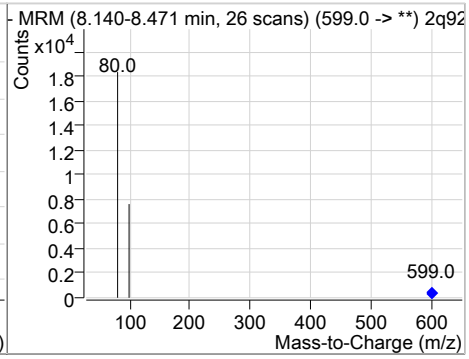




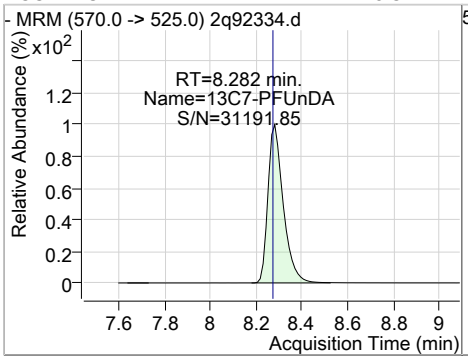
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.24	8.23	0.01	13049	599.0 -> 99.0	37.5	6.6	66.6

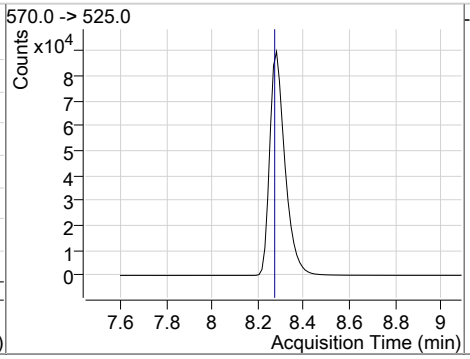


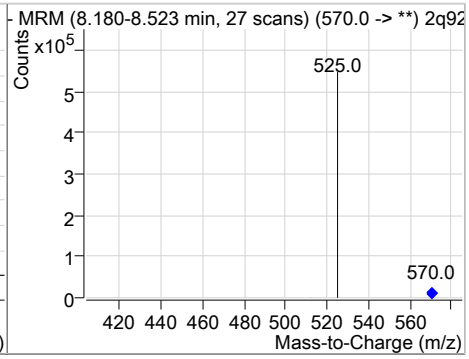




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.34	8.28	0.01	414957				

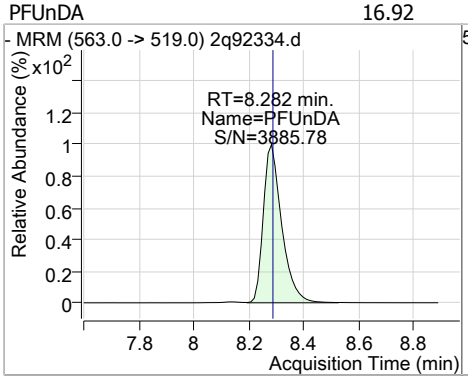


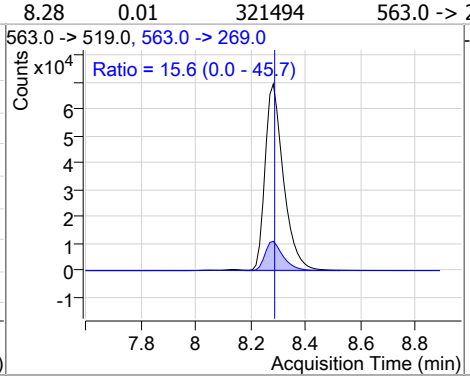


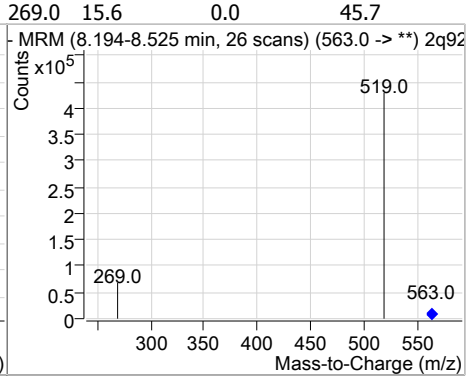


Perfluorinated Compounds by LC/MS/MS

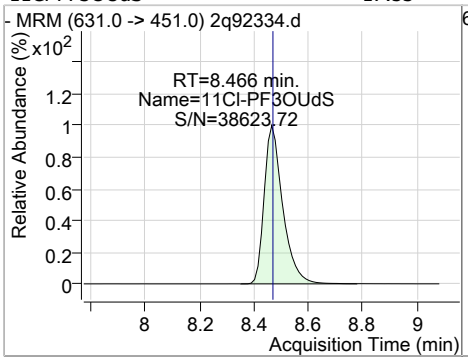
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.92	8.28	0.01	321494	563.0 -> 269.0	15.6	0.0	45.7

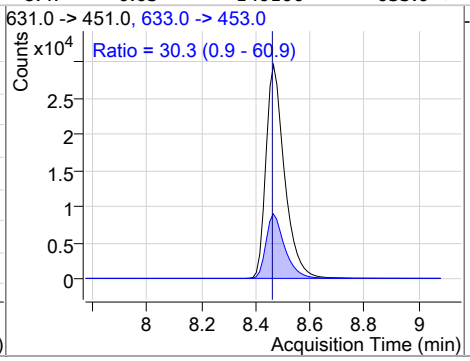


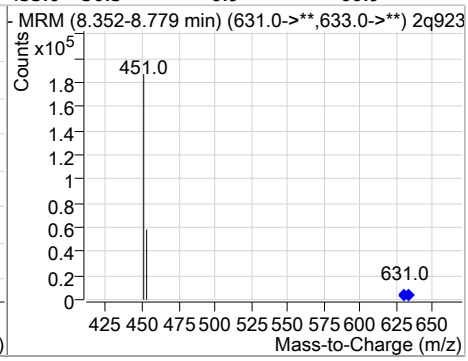




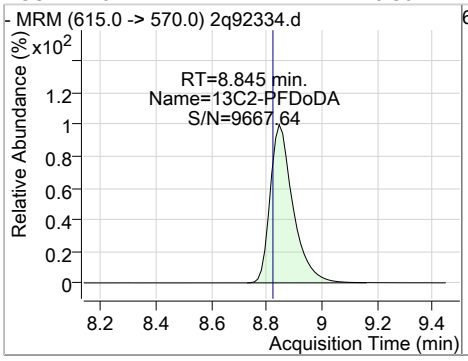
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.53	8.47	0.03	140100	633.0 -> 453.0	30.3	0.9	60.9

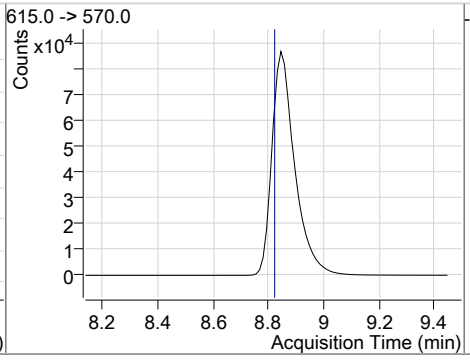


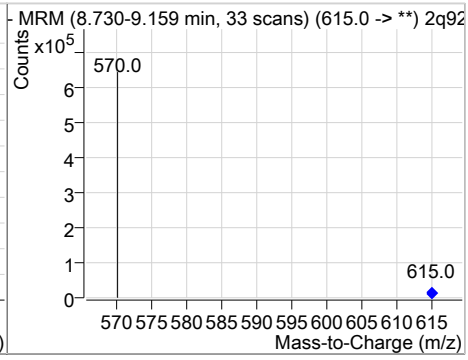




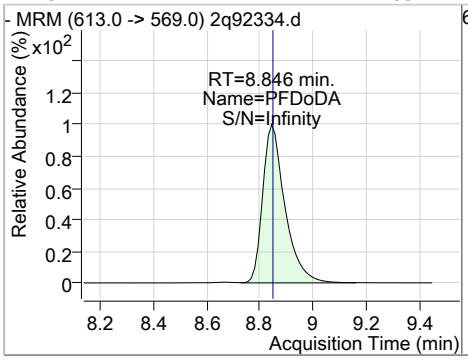
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.36	8.84	0.03	495816				

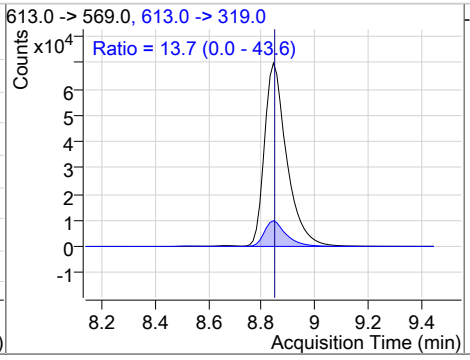


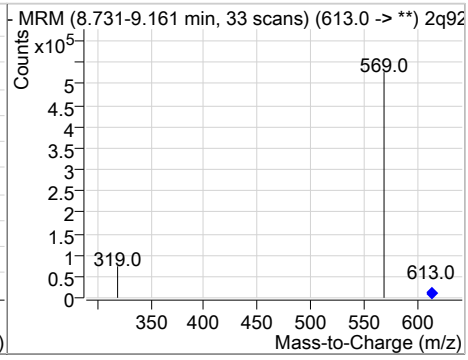




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	17.05	8.85	0.03	405486	613.0 -> 319.0	13.7	0.0	43.6

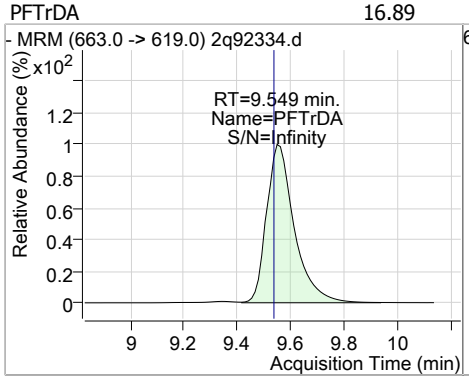


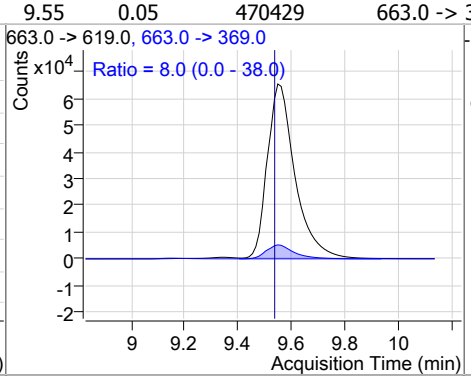


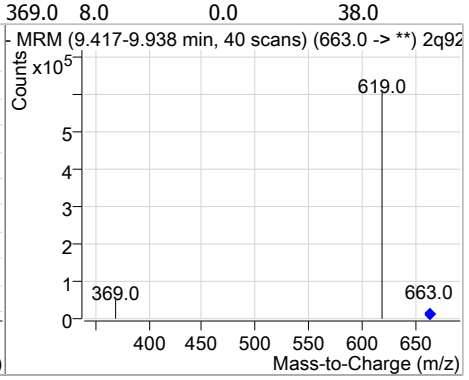


Perfluorinated Compounds by LC/MS/MS

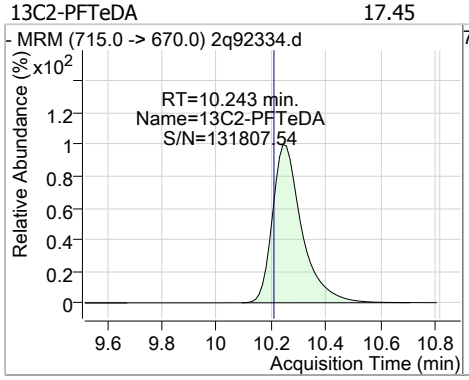
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.89	9.55	0.05	470429	663.0 -> 369.0	8.0	0.0	38.0

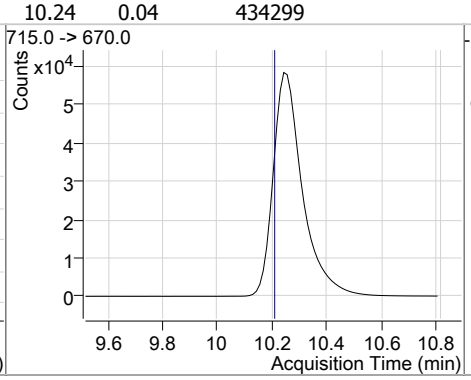


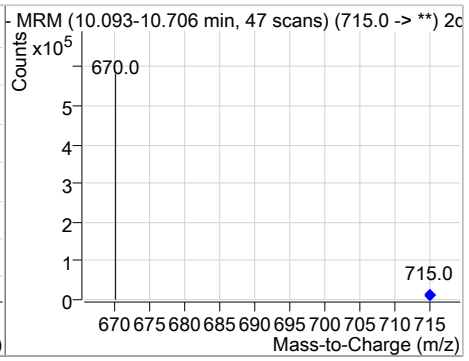




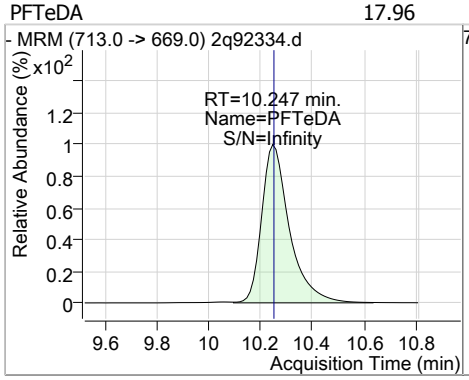
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.45	10.24	0.04	434299				

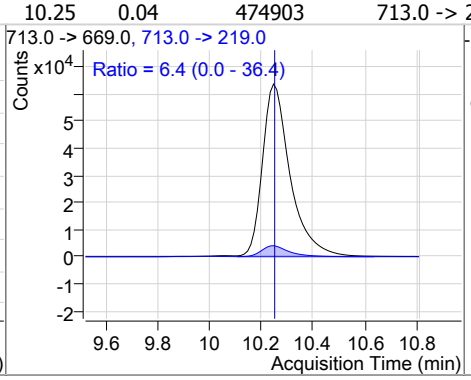


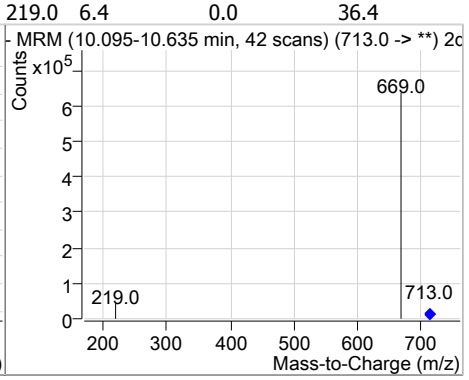




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.96	10.25	0.04	474903	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1293-ECC1287
Lab FileID: 2Q92334.D
Injection Time: 06/02/22 23:57
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/03/22 10:01 James Boone
Supervisor approved: 06/03/22 11:17 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:09

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92341.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 11:25:58 AM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

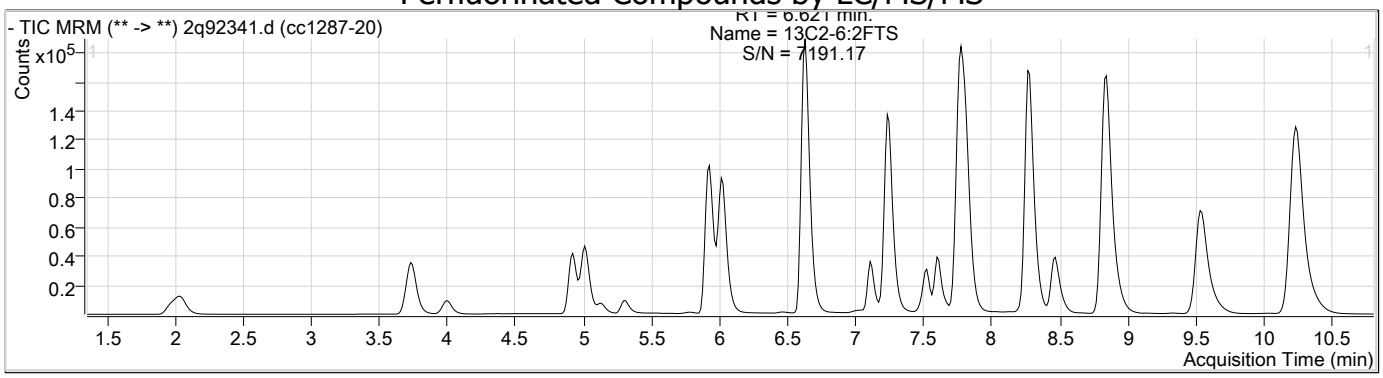
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	56680	20.00	µg/L	-0.025
M4-PFBA	2.027	217.0 -> 172.0	69979	20.00	µg/L	0.013
M5-PFPeA	3.736	268.0 -> 223.0	80304	20.00	µg/L	0.000
M5-PFHxA	5.014	318.0 -> 273.0	116261	20.00	µg/L	-0.013
M4-PFHpA	5.929	367.0 -> 322.0	168433	20.00	µg/L	0.000
M8-PFOA	6.636	421.0 -> 376.0	228004	20.00	µg/L	-0.013
M9-PFNA	7.239	472.0 -> 427.0	253391	20.00	µg/L	-0.013
M6-PFDA	7.779	519.0 -> 474.0	328524	20.00	µg/L	0.000
M7-PFUnDA	8.268	570.0 -> 525.0	414002	20.00	µg/L	0.000
M2-PFDoDA	8.845	615.0 -> 570.0	496725	20.00	µg/L	0.027
M2-PFTeDA	10.230	715.0 -> 670.0	443902	20.00	µg/L	0.025
M8-FOSA	7.111	506.0 -> 78.0	64323	20.00	µg/L	-0.038
M3-PFBS	4.004	302.0 -> 99.0	9446	20.00	µg/L	0.000
M3-PFHxS	5.948	402.0 -> 99.0	12934	20.00	µg/L	-0.019
M8-PFOS	7.225	507.0 -> 99.0	18887	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	8488	20.00	µg/L	-0.013
M2-6:2FTS	6.621	429.0 -> 81.0	17772	20.00	µg/L	-0.013
M2-8:2FTS	7.816	529.0 -> 81.0	25286	20.00	µg/L	0.000
M3-MeFOSAA	7.598	573.0 -> 419.0	68412	20.00	µg/L	-0.025
M3-HFPO-DA	5.306	287.0 -> 169.0	4872	20.00	µg/L	-0.013
M3-MeFOSA	7.527	515.0 -> 169.0	21748	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	8488	18.25	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C2-6:2FTS	6.621	429.0 -> 81.0	17772	17.18	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.9%		
13C2-8:2FTS	7.816	529.0 -> 81.0	25286	17.08	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.4%		
13C2-PFDoDA	8.845	615.0 -> 570.0	496725	18.39	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%		
13C2-PFTeDA	10.230	715.0 -> 670.0	443902	17.83	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%		
13C3-PFBS	4.004	302.0 -> 99.0	9446	18.57	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.9%		
13C3-PFHxS	5.948	402.0 -> 99.0	12934	18.14	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
13C4-PFBA	2.027	217.0 -> 172.0	69979	18.11	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%		
13C4-PFHpA	5.929	367.0 -> 322.0	168433	18.14	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
d5-EtFOSAA	7.735	589.0 -> 419.0	56680	18.67	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.4%		
13C5-PFHxA	5.014	318.0 -> 273.0	116261	17.22	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.1%		
13C5-PFPeA	3.736	268.0 -> 223.0	80304	17.62	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

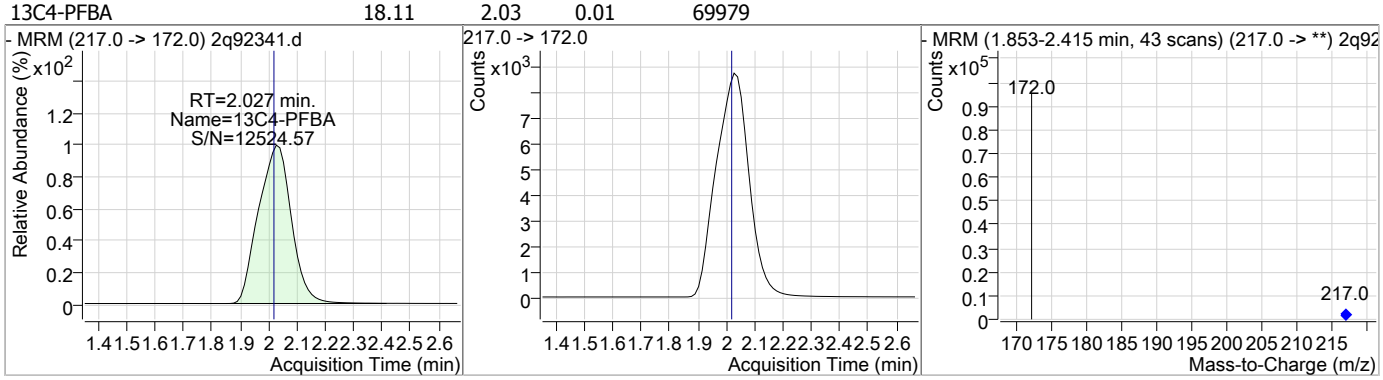
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%			
13C6-PFDA	7.779	519.0 -> 474.0	328524	18.04	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.2%			
13C7-PFUnDA	8.268	570.0 -> 525.0	414002	18.30	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.5%			
13C8-FOSA	7.111	506.0 -> 78.0	64323	17.48	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.4%			
13C8-PFOA	6.636	421.0 -> 376.0	228004	17.71	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.6%			
13C8-PFOS	7.225	507.0 -> 99.0	18887	18.20	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.0%			
13C9-PFNA	7.239	472.0 -> 427.0	253391	17.37	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%			
d3-MeFOSAA	7.598	573.0 -> 419.0	68412	17.84	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	4872	18.71	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.5%			
d3-MeFOSA	7.527	515.0 -> 169.0	21748	15.54	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	74724	16.80	µg/L		98
6:2FTS	6.622	427.0 -> 407.0	118148	18.03	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	111848	18.57	µg/L		98
EtFOSAA	7.748	584.0 -> 419.0	48127	17.04	µg/L	m	97
FOSA	7.112	498.0 -> 78.0	59138	17.51	µg/L		98
MeFOSAA	7.598	570.0 -> 419.0	55756	17.74	µg/L	m	99
PFBA	2.033	213.0 -> 169.0	30686	17.10	µg/L		100
PFBS	3.994	299.0 -> 80.0	27162	17.25	µg/L		100
PFDA	7.780	513.0 -> 469.0	283058	17.00	µg/L		98
PFDoDA	8.846	613.0 -> 569.0	405996	17.04	µg/L		100
PFDS	8.215	599.0 -> 80.0	13482	17.85	µg/L		99
PFHpA	5.930	363.0 -> 319.0	242841	17.63	µg/L		99
PFHpS	6.632	449.0 -> 80.0	28046	18.45	µg/L		100
PFHxA	5.015	313.0 -> 269.0	74653	17.35	µg/L		98
PFHxS	5.949	399.0 -> 80.0	27486	16.93	µg/L	m	100
PFNA	7.240	463.0 -> 419.0	256862	18.23	µg/L		100
PFNS	7.738	549.0 -> 80.0	23267	17.49	µg/L		99
PFOA	6.637	413.0 -> 369.0	214840	17.35	µg/L		98
PFOS	7.225	499.0 -> 80.0	29026	17.56	µg/L	m	96
PFPeA	3.739	263.0 -> 219.0	113312	18.32	µg/L		100
PFPeS	5.132	349.0 -> 80.0	18971	17.61	µg/L		100
PFTeDA	10.235	713.0 -> 669.0	484887	17.94	µg/L		100
PFTrDA	9.537	663.0 -> 619.0	473928	16.98	µg/L		100
PFUnDA	8.270	563.0 -> 519.0	321136	16.94	µg/L		99
11Cl-PF3OUdS	8.466	631.0 -> 451.0	139798	17.46	µg/L		100
9Cl-PF3ONS	7.499	531.0 -> 351.0	28896	16.23	µg/L		99
ADONA	6.019	377.0 -> 251.0	296117	17.28	µg/L		100
HFPO-DA	5.300	329.0 -> 169.0	31719	18.06	µg/L		99
MeFOSA	7.528	512.0 -> 219.0	16388	17.87	µg/L		97

= Qualifier out of range, m = manually integrated, + = Area summed

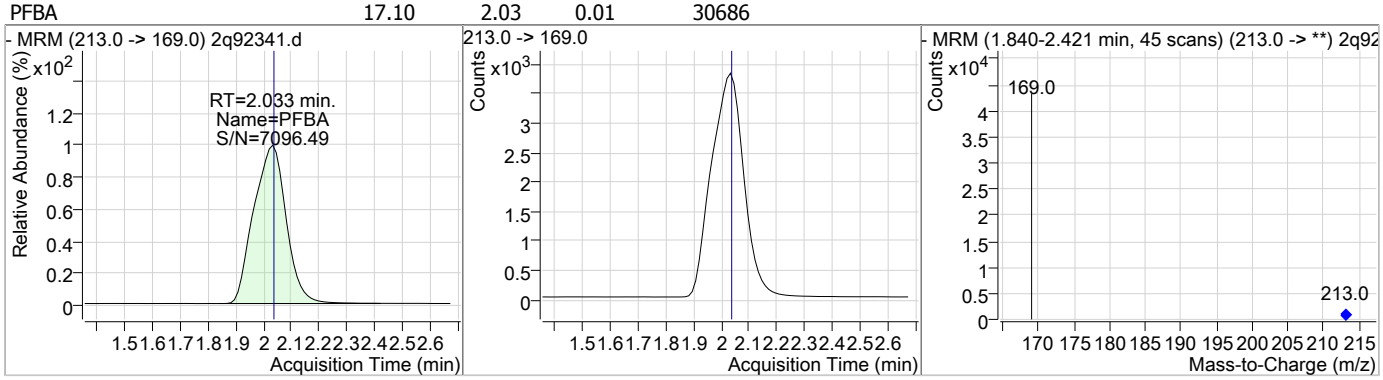
Perfluorinated Compounds by LC/MS/MS



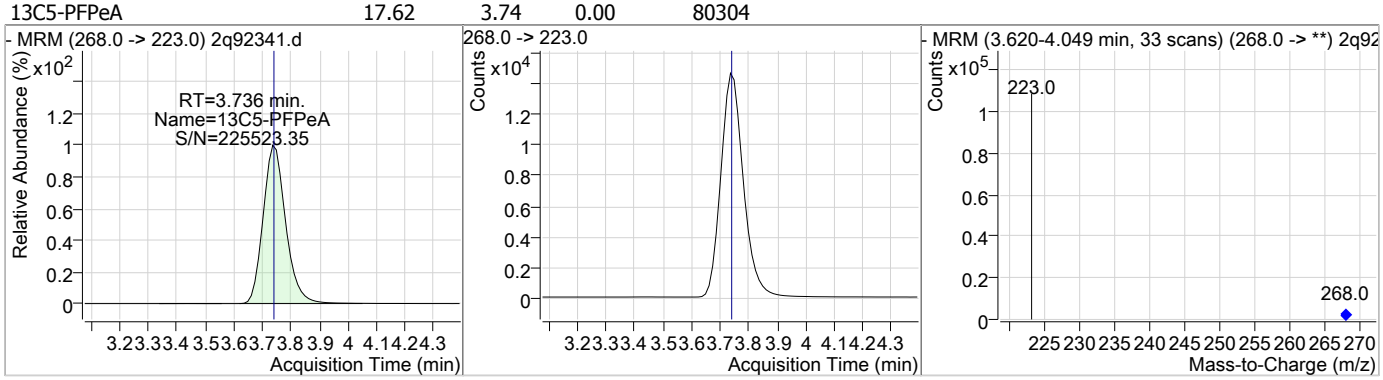
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.11	2.03	0.01	69979				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	17.10	2.03	0.01	30686				

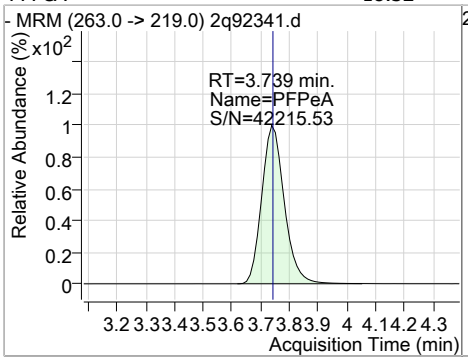


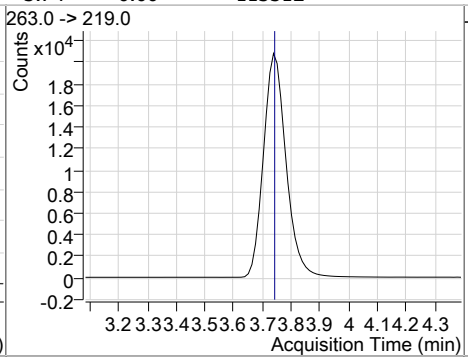
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.62	3.74	0.00	80304				

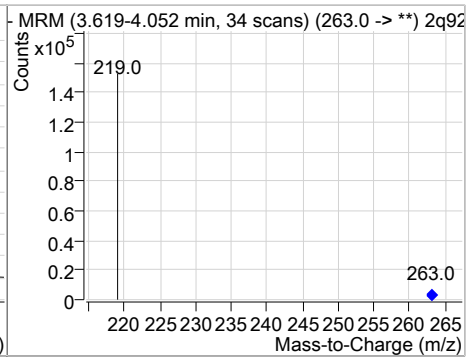


Perfluorinated Compounds by LC/MS/MS

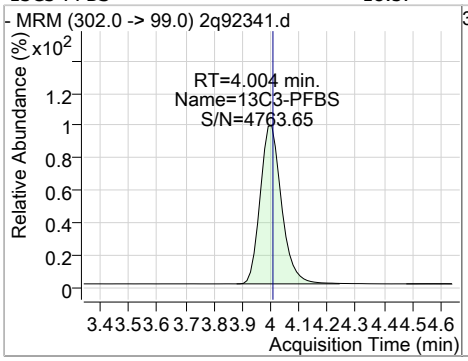
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.32	3.74	0.00	113312				

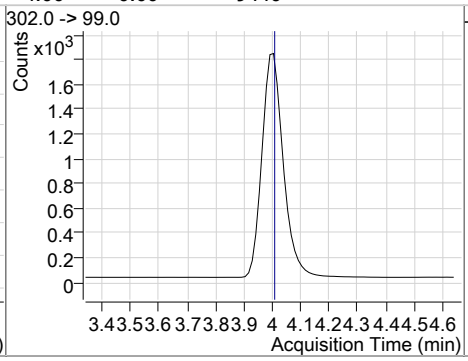


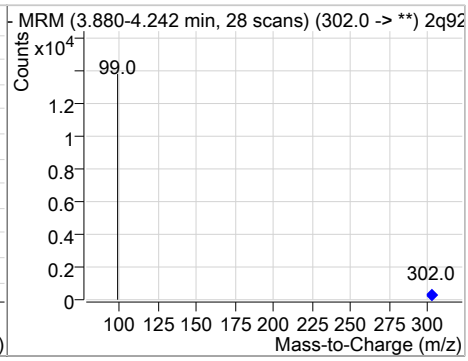




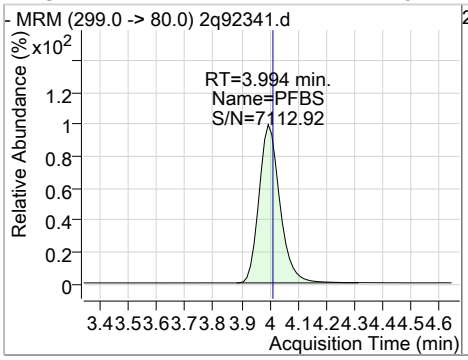
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.57	4.00	0.00	9446				

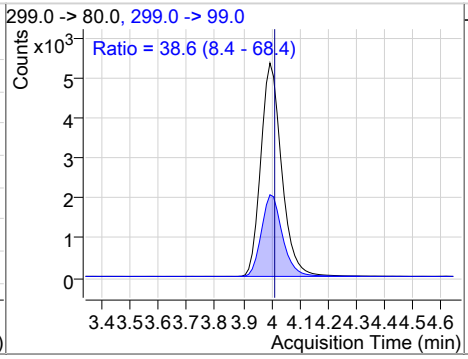


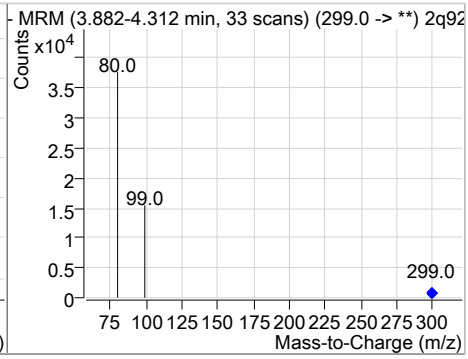




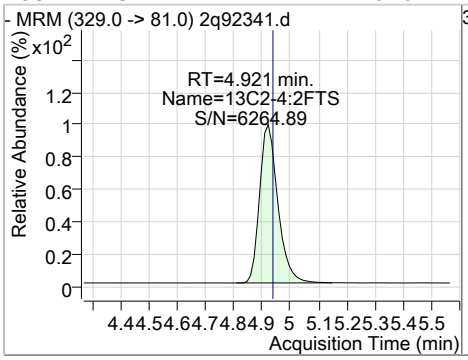
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.25	3.99	-0.01	27162	299.0 -> 99.0	38.6	8.4	68.4

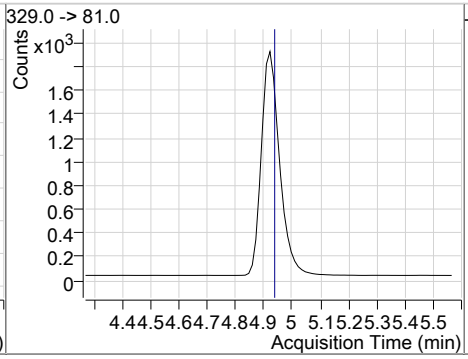


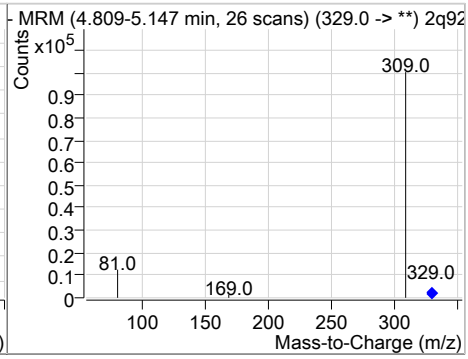




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.25	4.92	-0.01	8488				

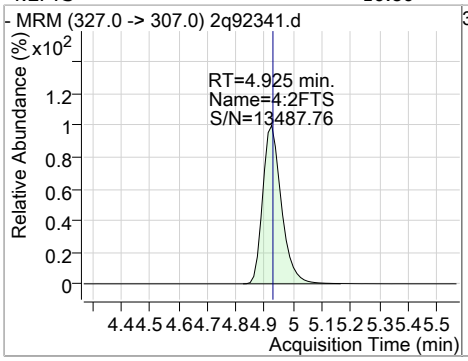


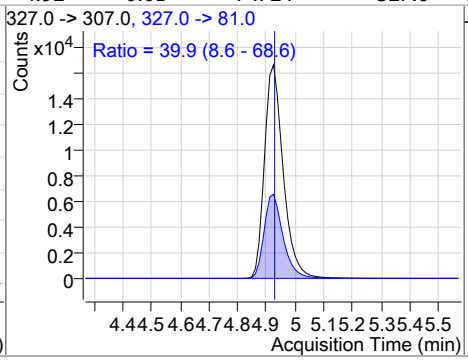


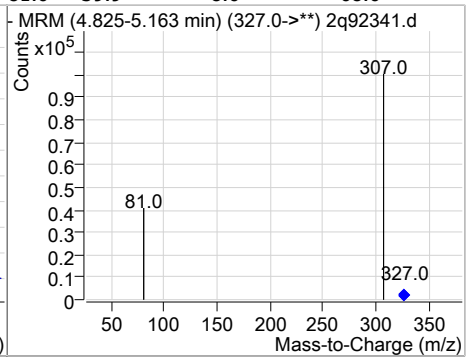


Perfluorinated Compounds by LC/MS/MS

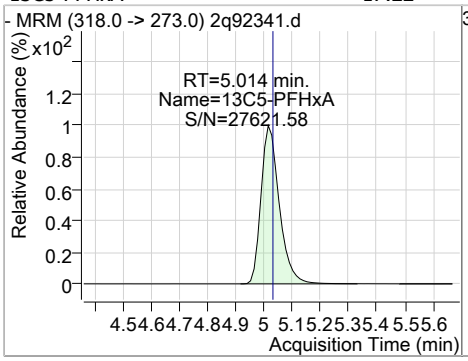
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.80	4.92	-0.01	74724	327.0 -> 81.0	39.9	8.6	68.6

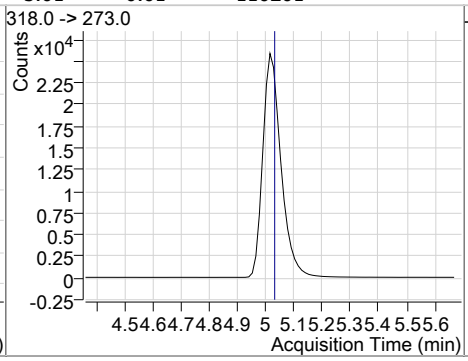


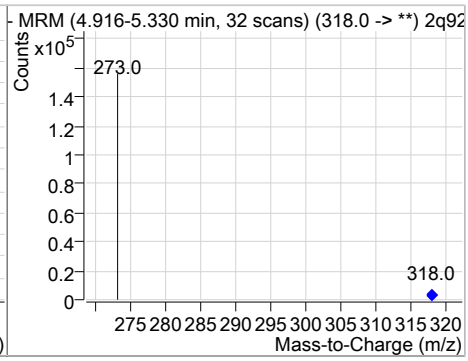




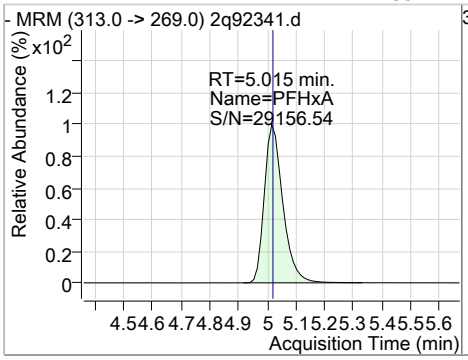
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.22	5.01	-0.01	116261				

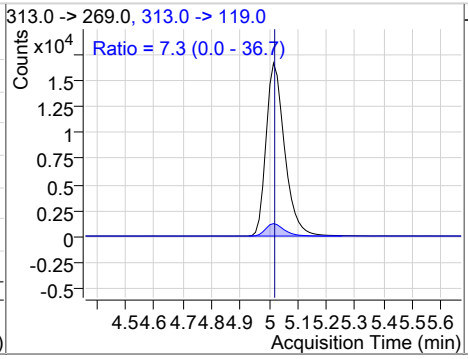


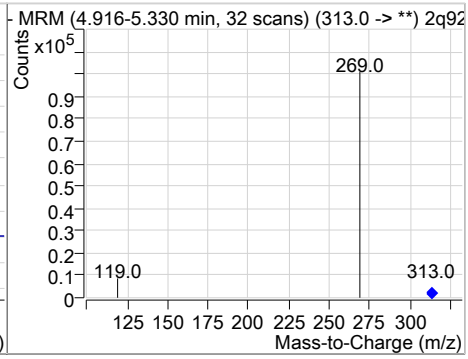




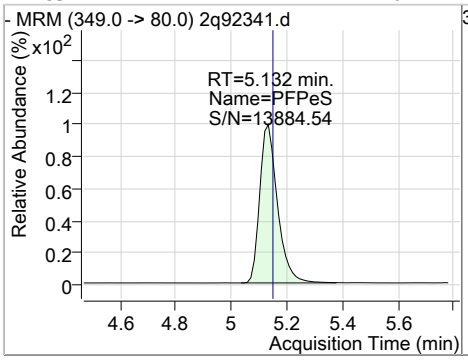
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.35	5.02	-0.01	74653	313.0 -> 119.0	7.3	0.0	36.7

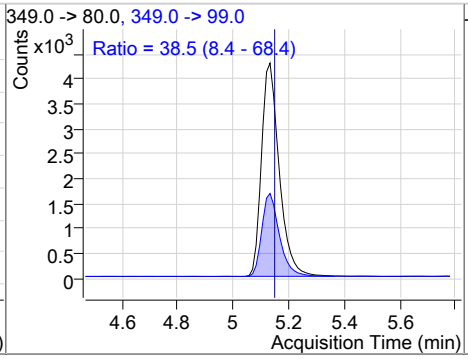


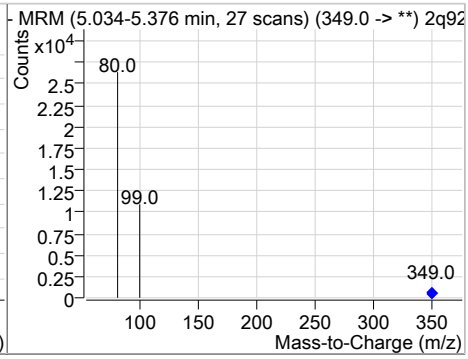




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.61	5.13	-0.01	18971	349.0 -> 99.0	38.5	8.4	68.4

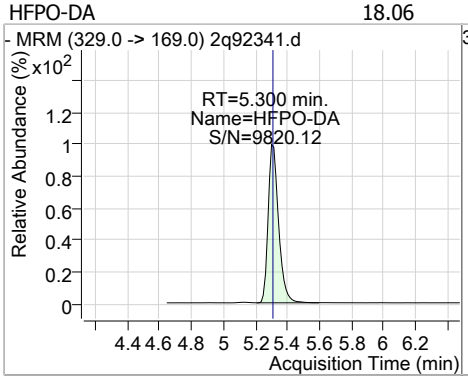


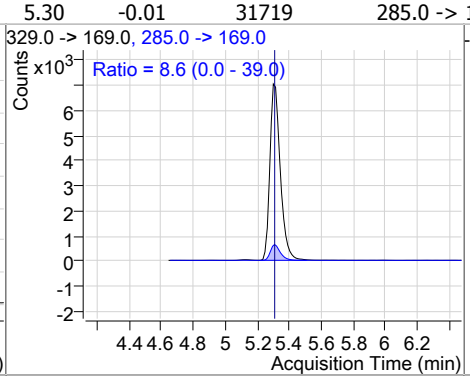


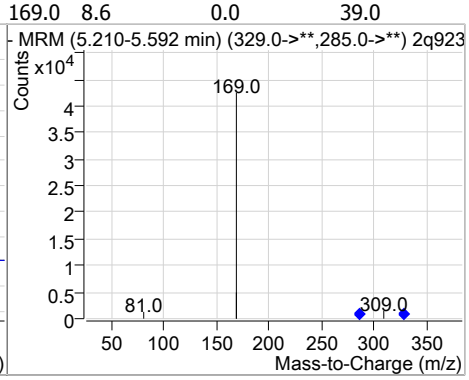


Perfluorinated Compounds by LC/MS/MS

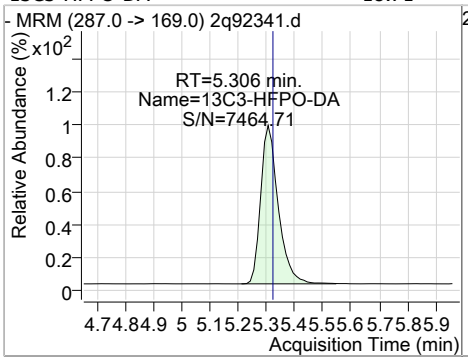
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.06	5.30	-0.01	31719	285.0 -> 169.0	8.6	0.0	39.0

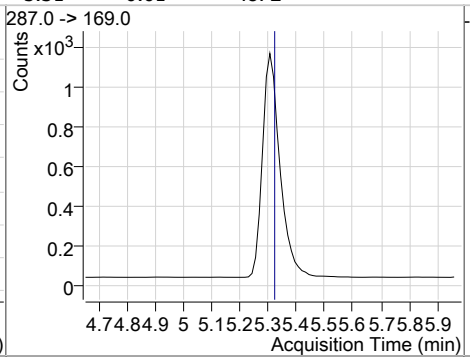


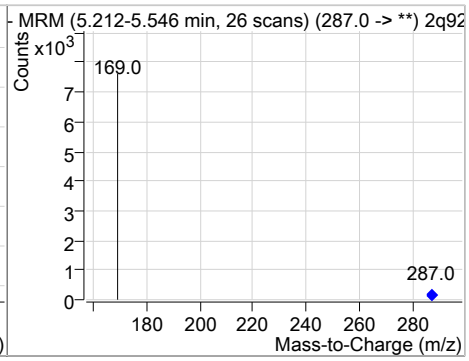




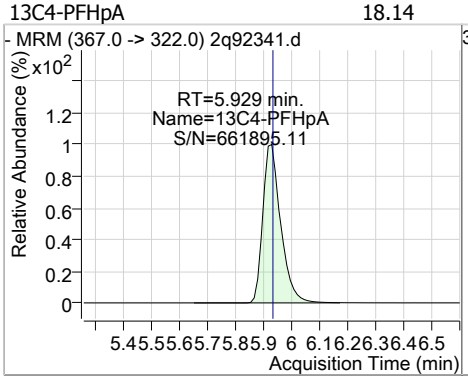
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	18.71	5.31	-0.01	4872				

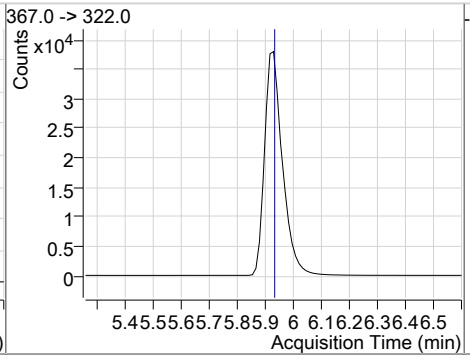


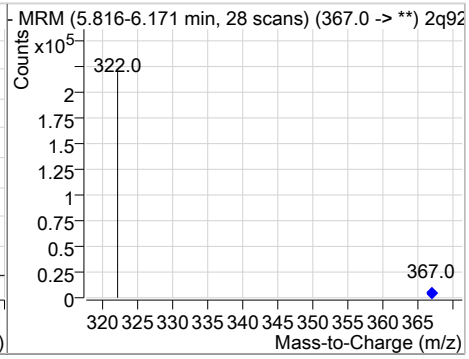




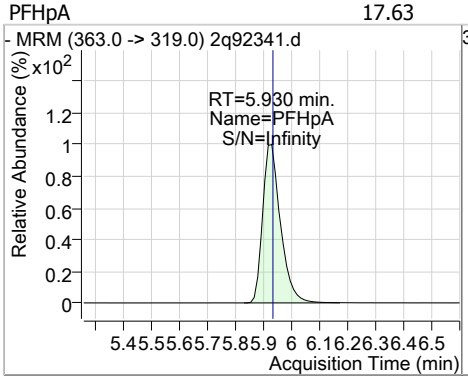
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.14	5.93	0.00	168433				

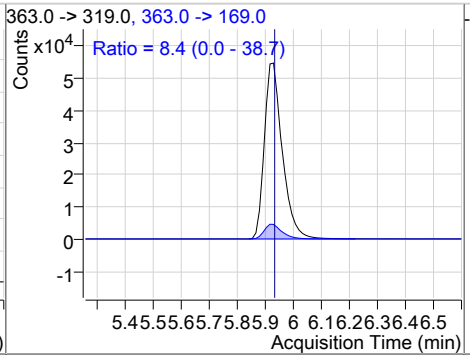


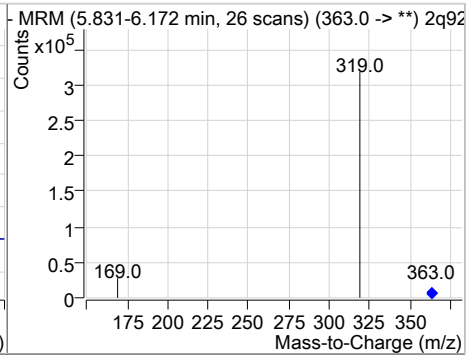




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.63	5.93	0.00	242841	363.0 -> 169.0	8.4	0.0	38.7

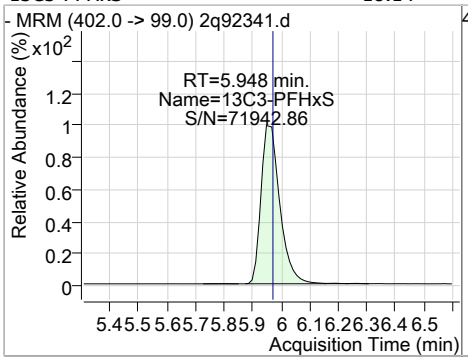


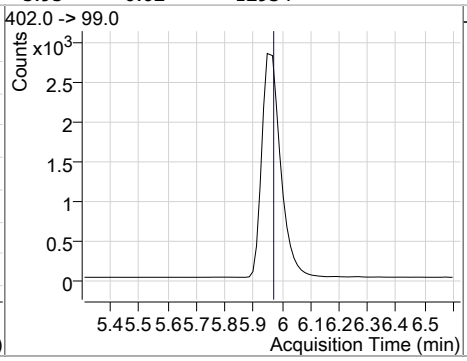


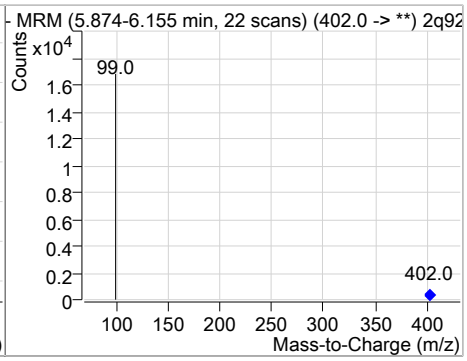


Perfluorinated Compounds by LC/MS/MS

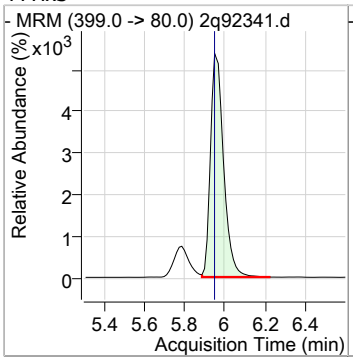
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.14	5.95	-0.02	12934				

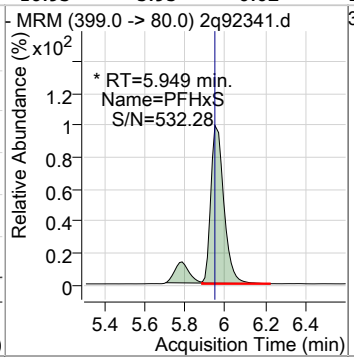


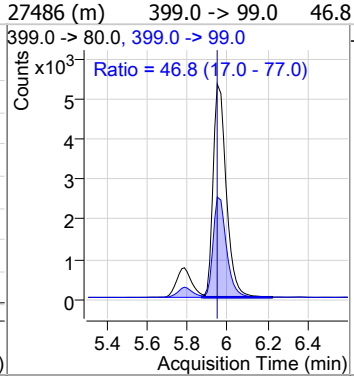


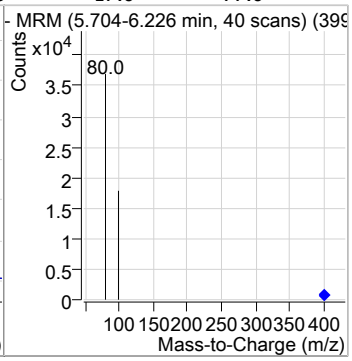


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	16.93	5.95	-0.02	27486 (m)	399.0 -> 99.0	46.8	17.0	77.0

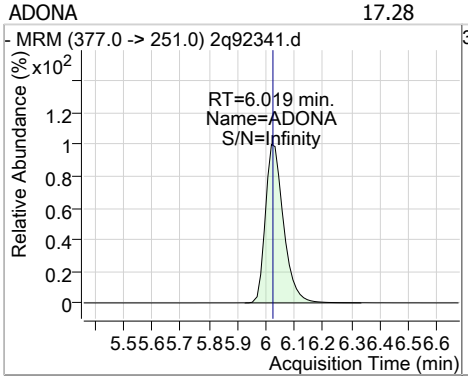


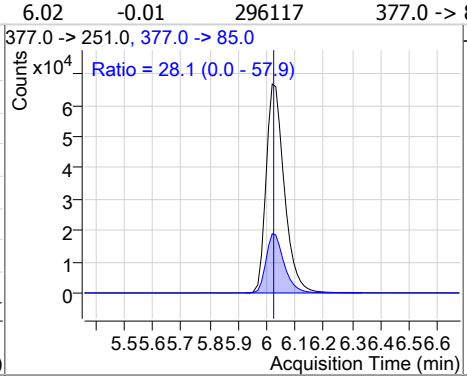


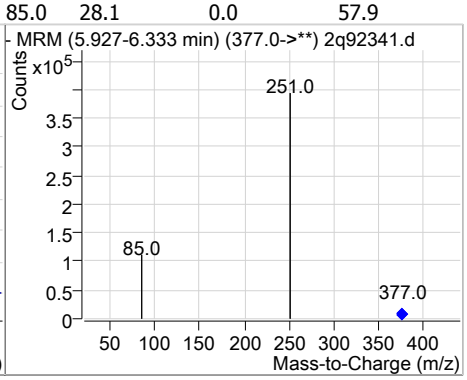




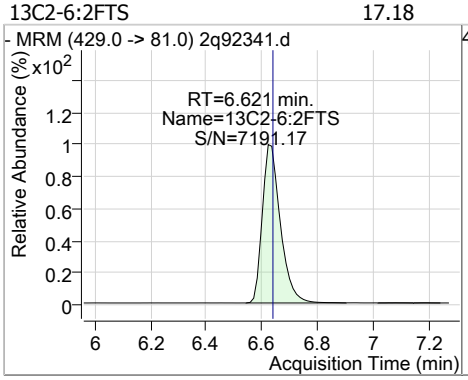
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	17.28	6.02	-0.01	296117	377.0 -> 85.0	28.1	0.0	57.9

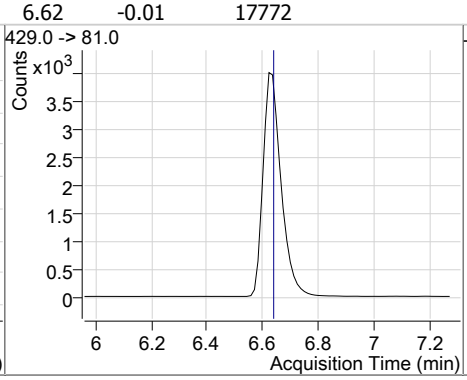


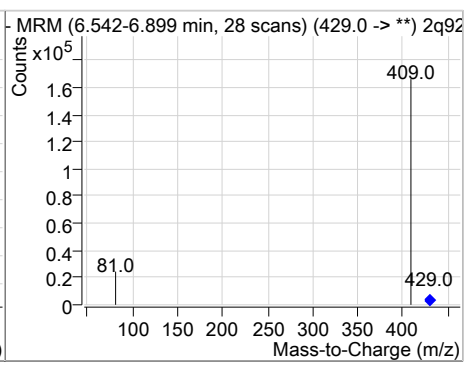




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.18	6.62	-0.01	17772				

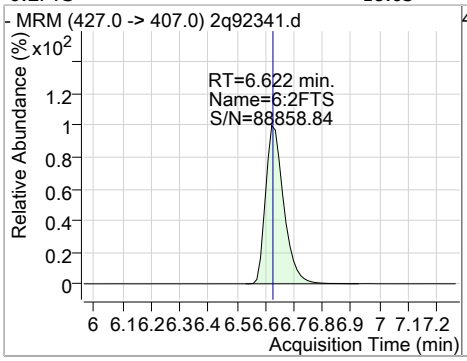


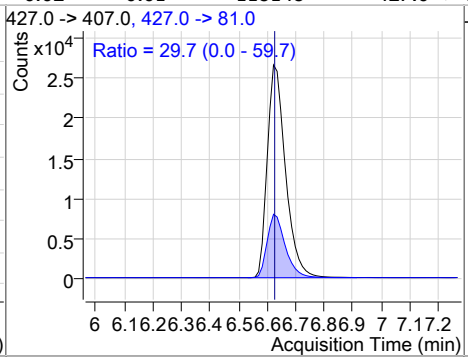


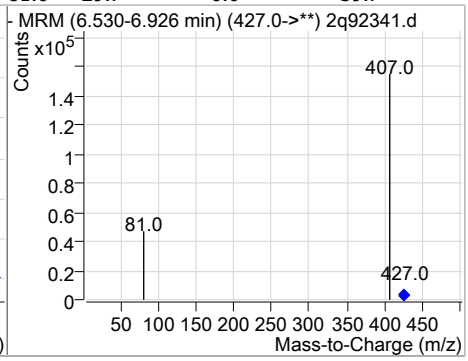


Perfluorinated Compounds by LC/MS/MS

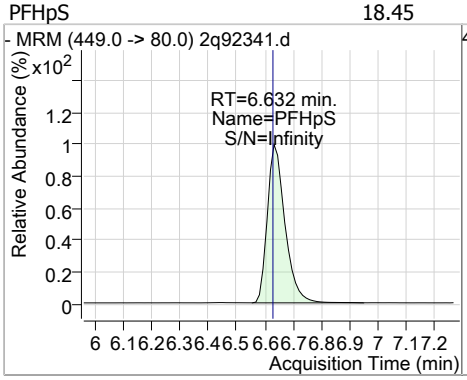
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.03	6.62	-0.01	118148	427.0 -> 81.0	29.7	0.0	59.7

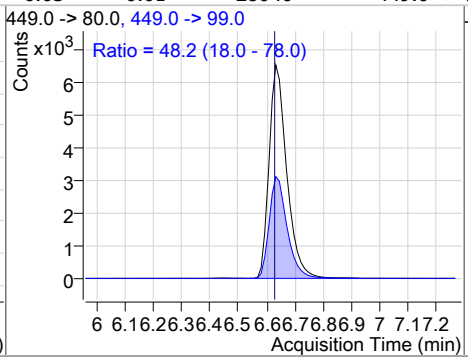


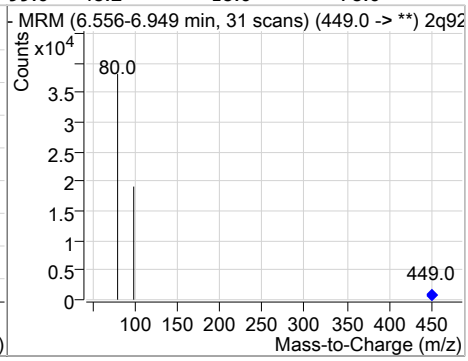




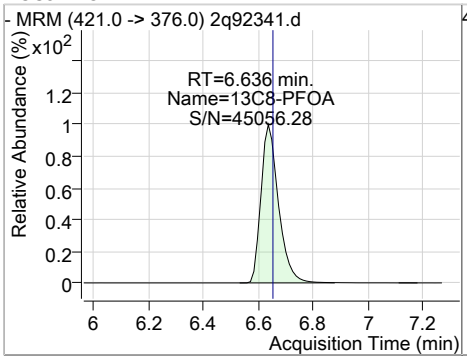
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	18.45	6.63	-0.01	28046	449.0 -> 99.0	48.2	18.0	78.0

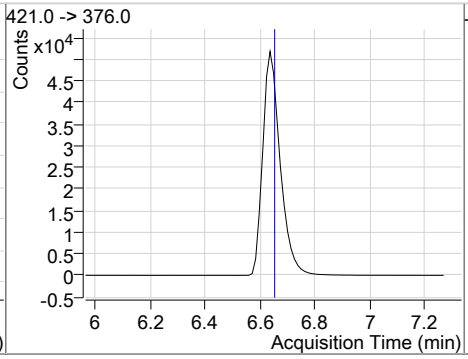


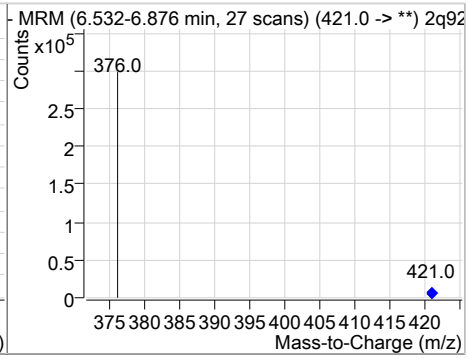




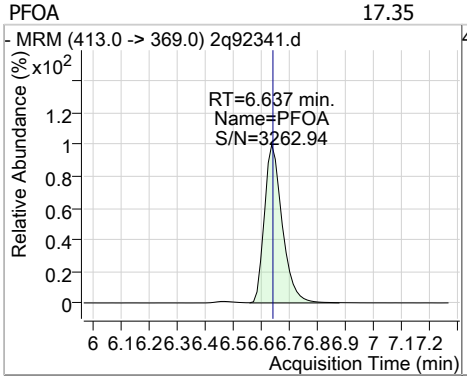
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.71	6.64	-0.01	228004				

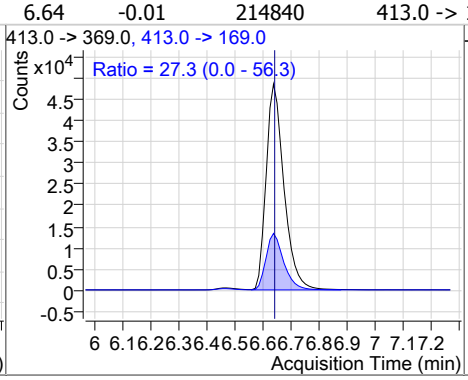


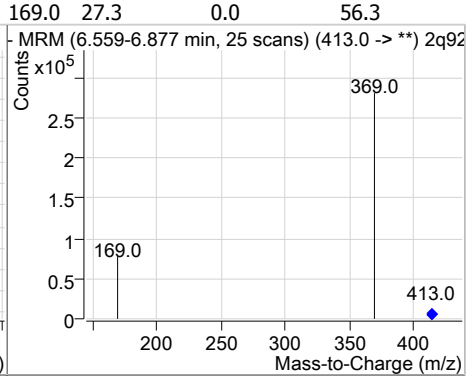




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.35	6.64	-0.01	214840	413.0 -> 169.0	27.3	0.0	56.3

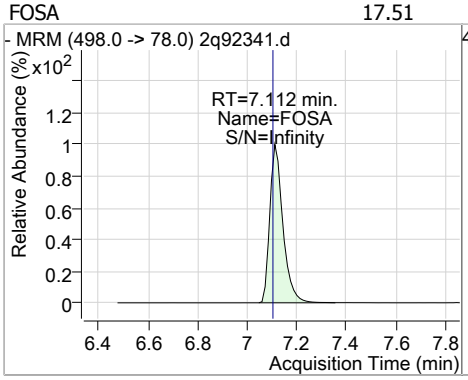


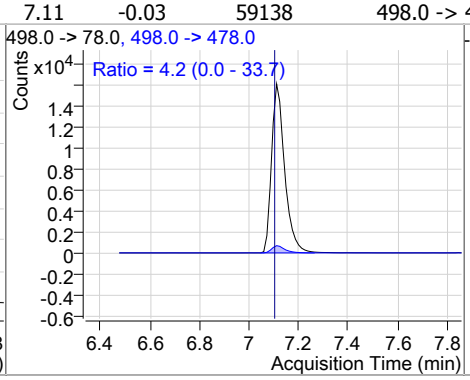


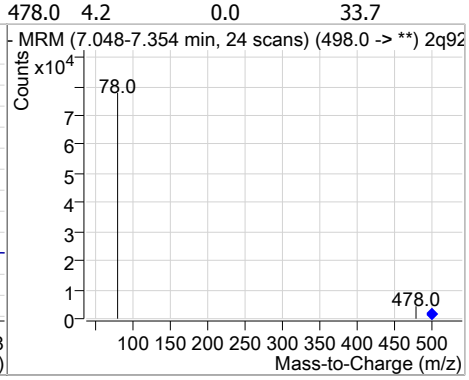


Perfluorinated Compounds by LC/MS/MS

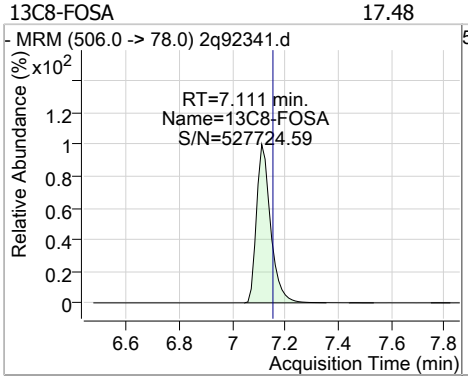
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.51	7.11	-0.03	59138	498.0 -> 478.0	4.2	0.0	33.7

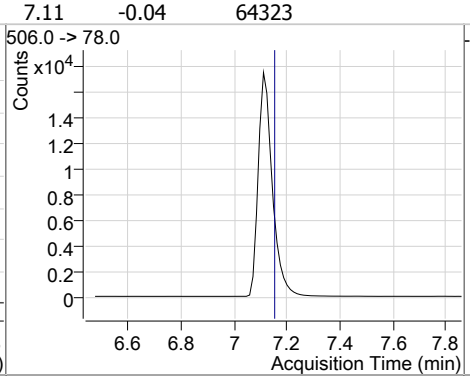


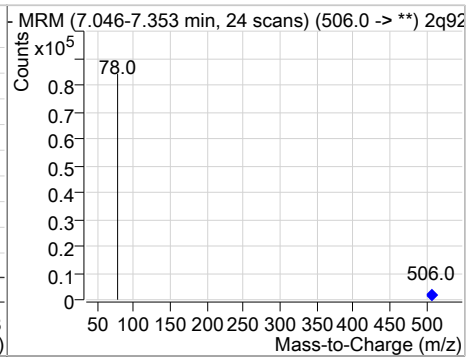




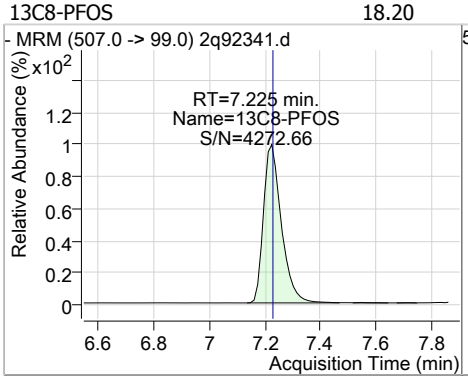
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.48	7.11	-0.04	64323				

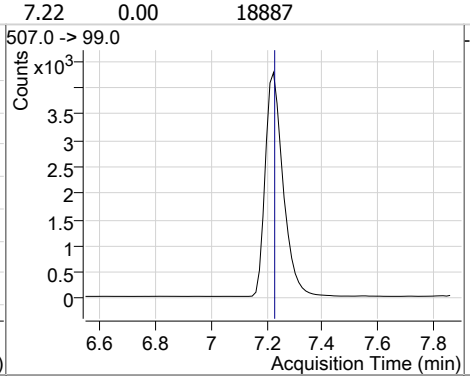


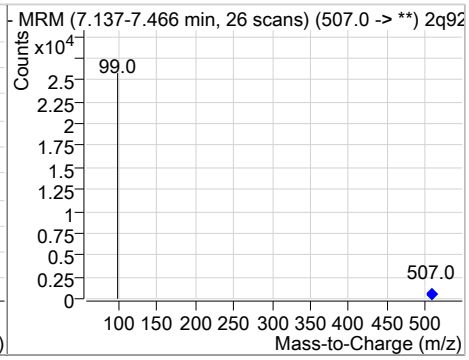




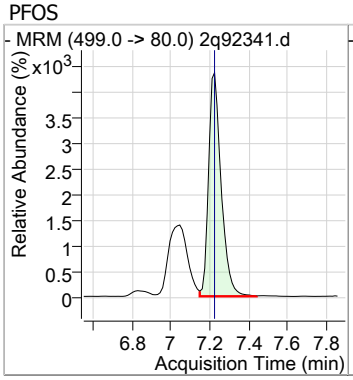
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.20	7.22	0.00	18887				

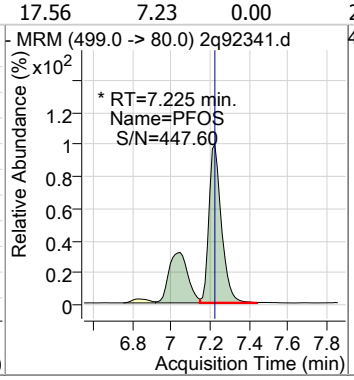


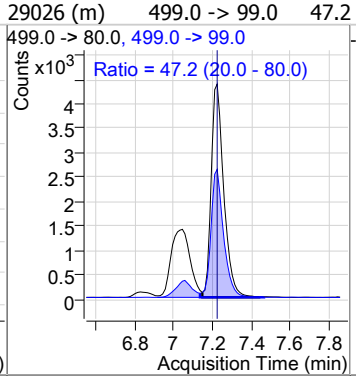


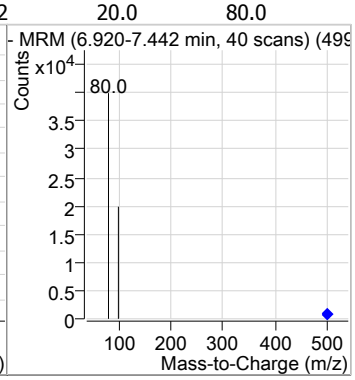


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.56	7.23	0.00	29026 (m)	499.0 -> 99.0	47.2	20.0	80.0



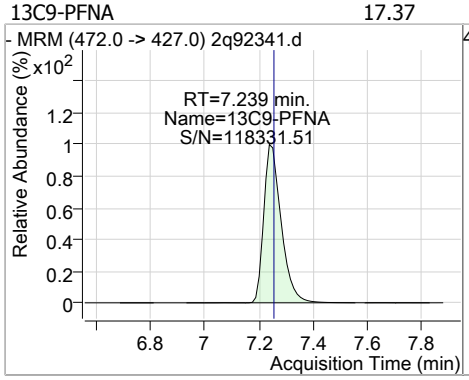


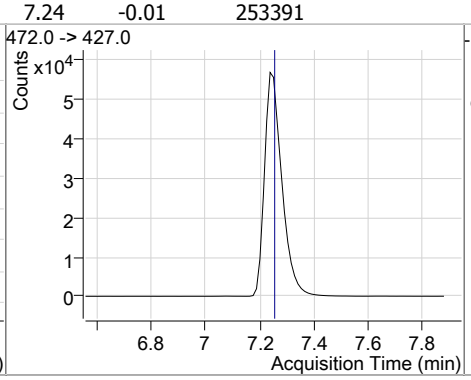


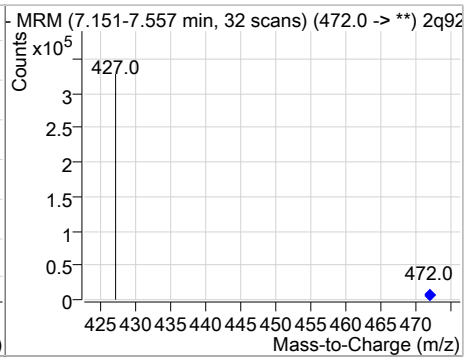


Perfluorinated Compounds by LC/MS/MS

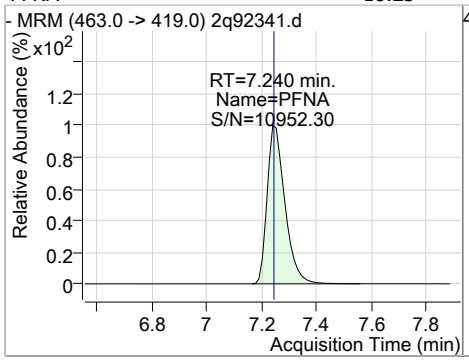
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.37	7.24	-0.01	253391				

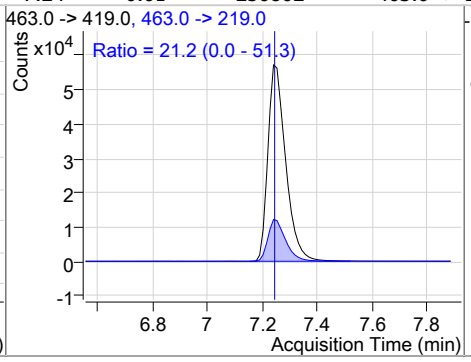


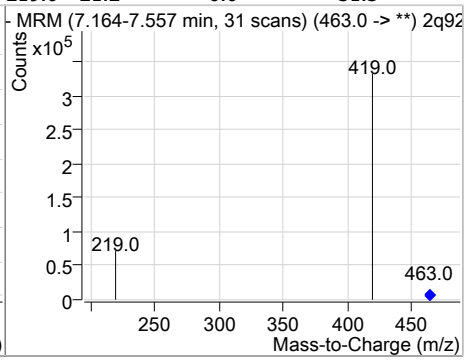




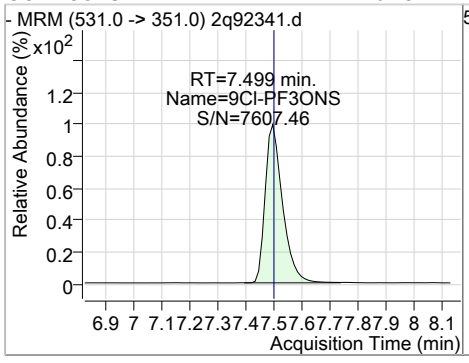
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	18.23	7.24	-0.01	256862	463.0 -> 219.0	21.2	0.0	51.3

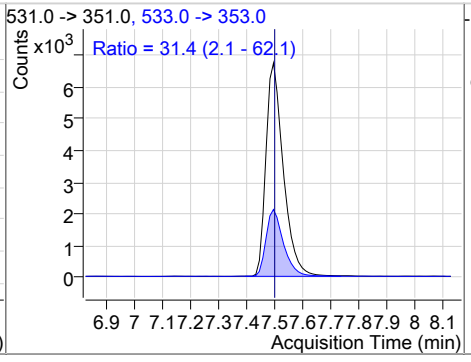


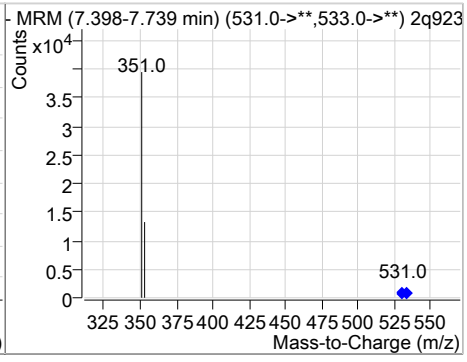




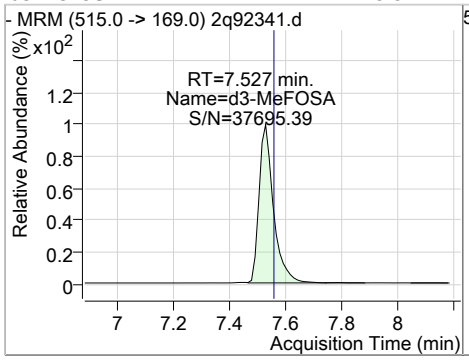
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.23	7.50	0.00	28896	533.0 -> 353.0	31.4	2.1	62.1

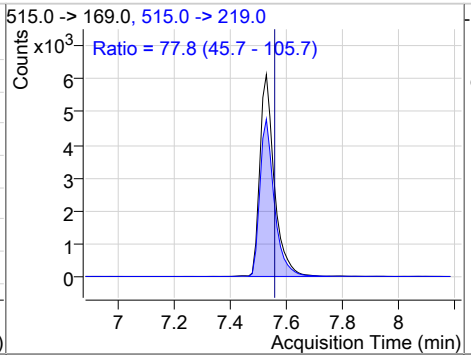


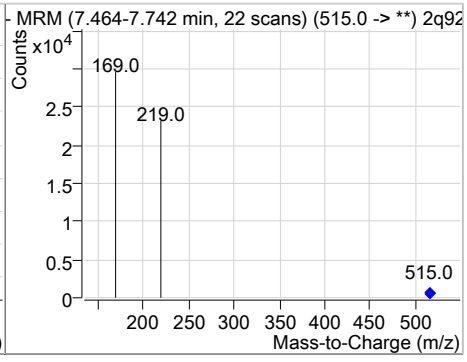




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	15.54	7.53	-0.03	21748	515.0 -> 219.0	77.8	45.7	105.7

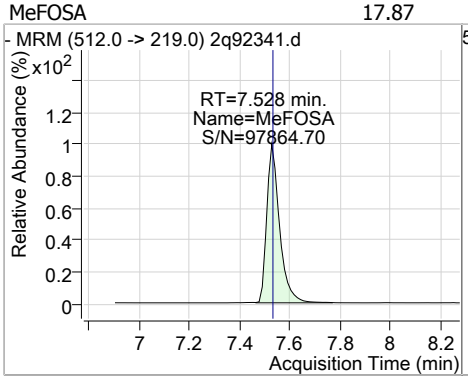


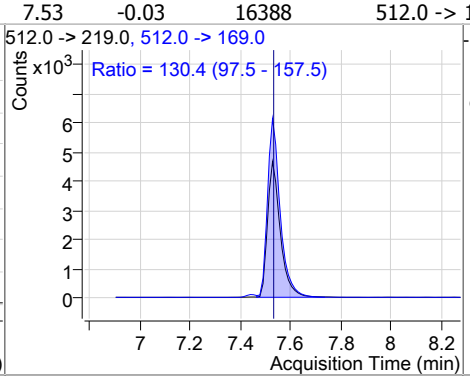


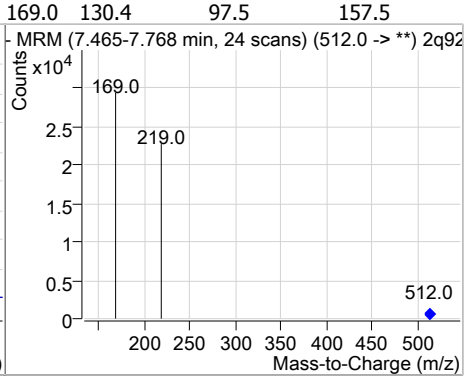


Perfluorinated Compounds by LC/MS/MS

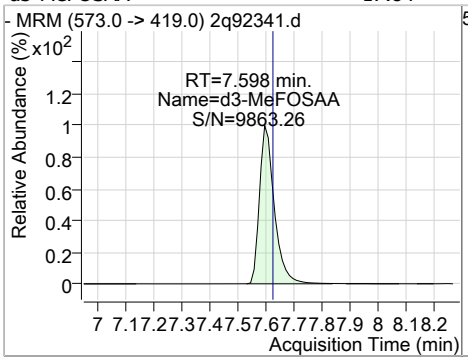
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	17.87	7.53	-0.03	16388	512.0 -> 169.0	130.4	97.5	157.5

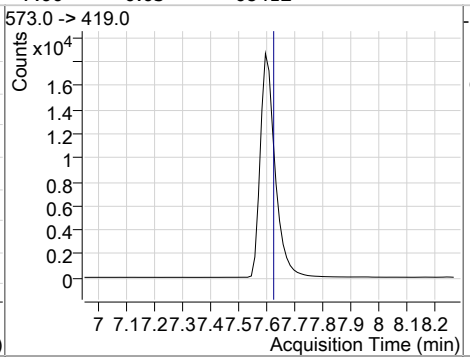


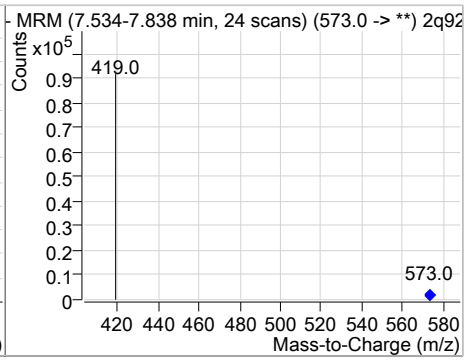




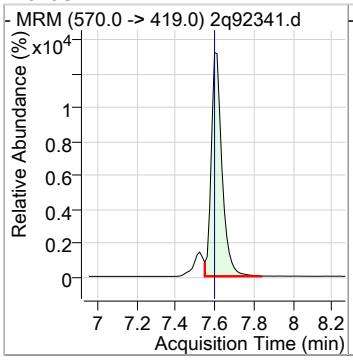
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.84	7.60	-0.03	68412				

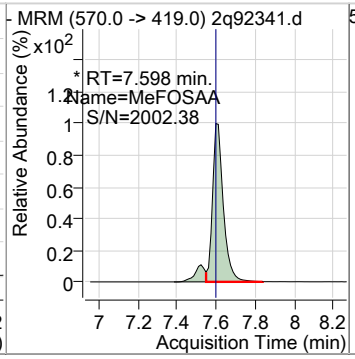


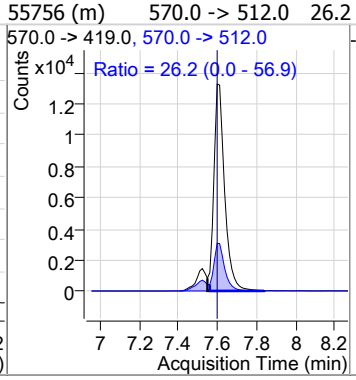


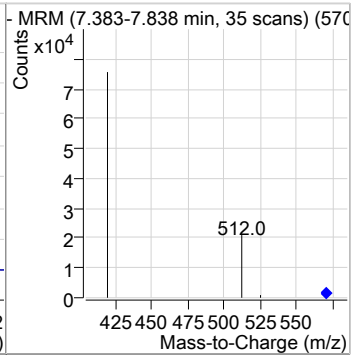


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.74	7.60	-0.03	55756 (m)	570.0 -> 512.0	26.2	0.0	56.9

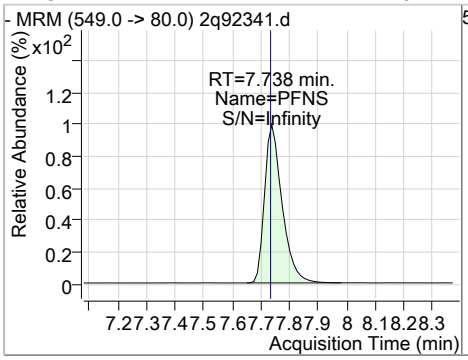


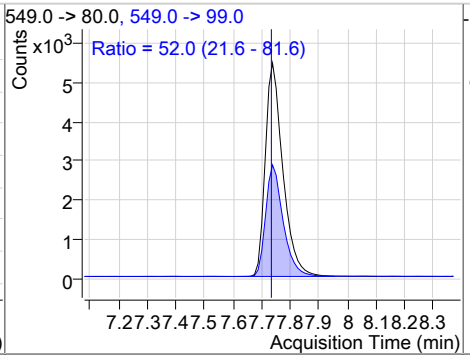


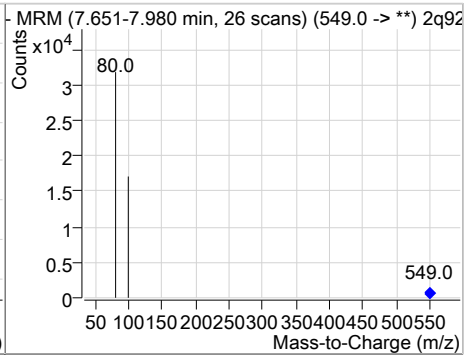




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.49	7.74	0.00	23267	549.0 -> 99.0	52.0	21.6	81.6

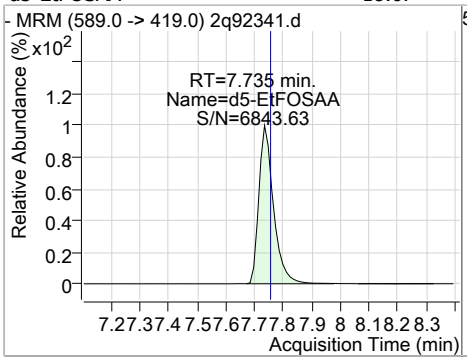


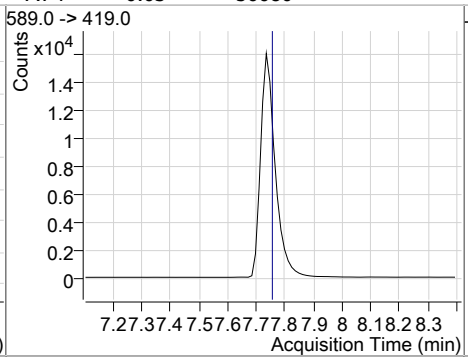


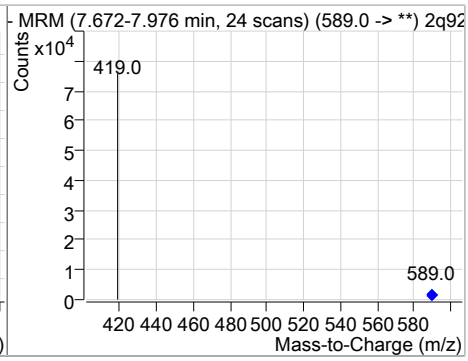


Perfluorinated Compounds by LC/MS/MS

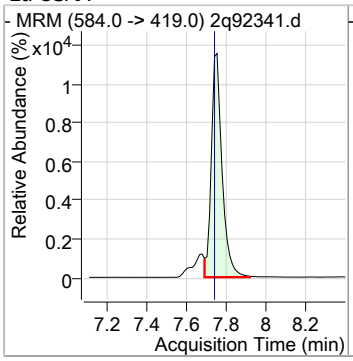
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.67	7.74	-0.03	56680				

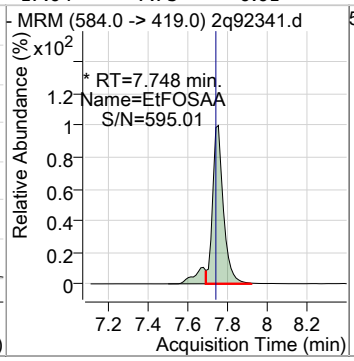


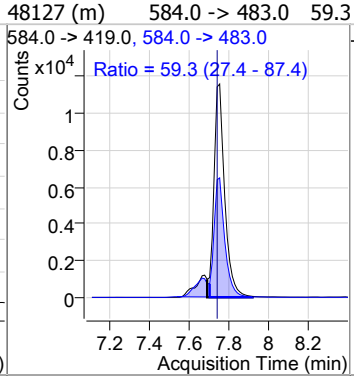


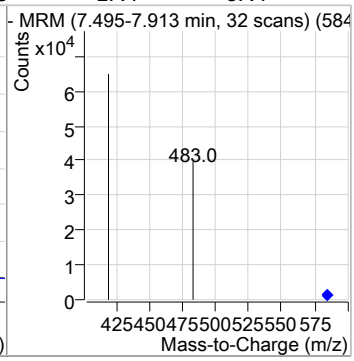


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.04	7.75	-0.01	48127 (m)	584.0 -> 483.0	59.3	27.4	87.4

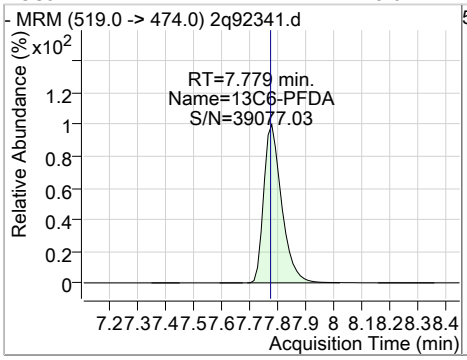


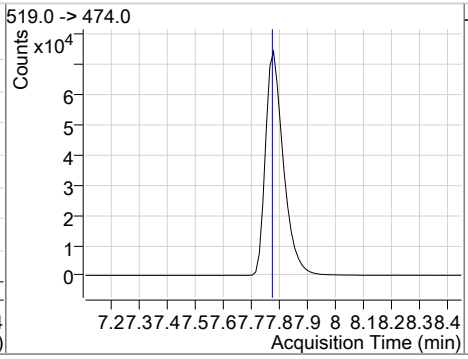


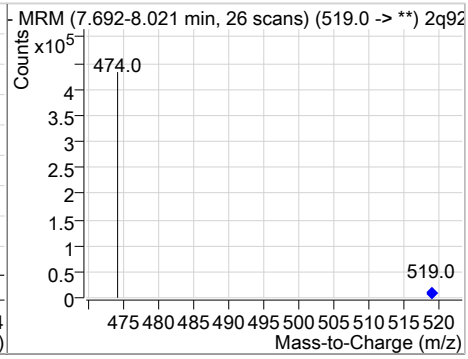




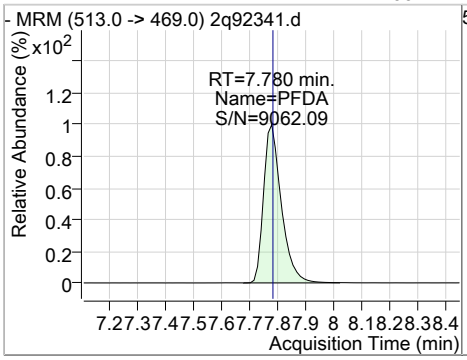
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.04	7.78	0.00	328524				

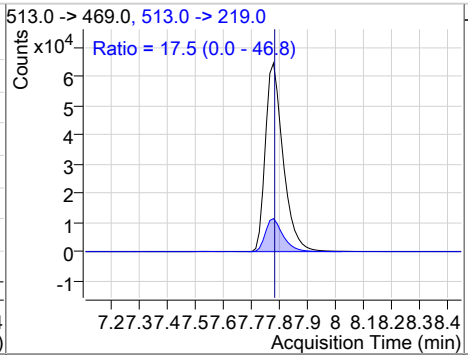


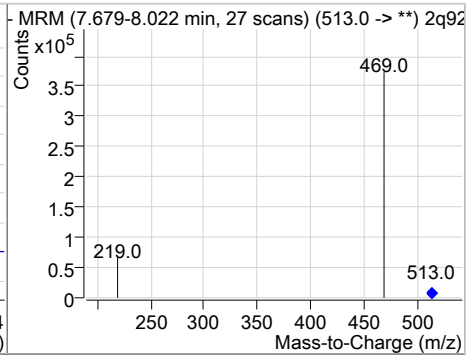




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.00	7.78	0.00	283058	513.0 -> 219.0	17.5	0.0	46.8

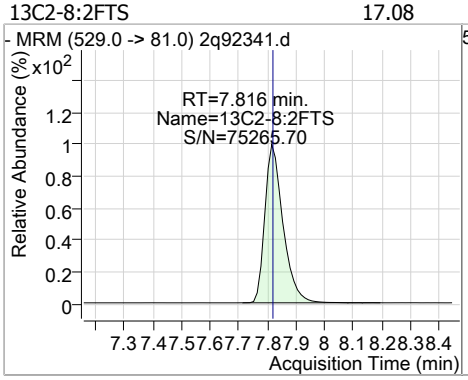


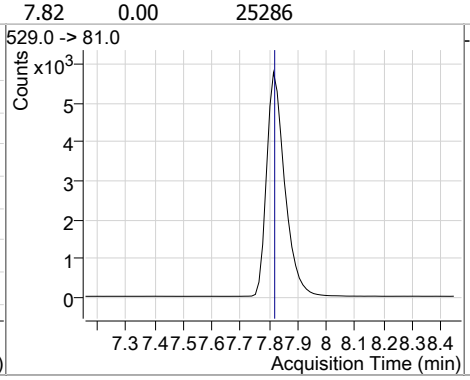


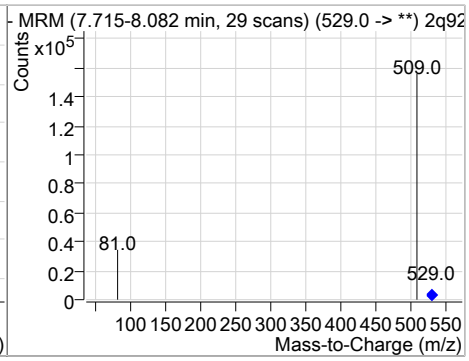


Perfluorinated Compounds by LC/MS/MS

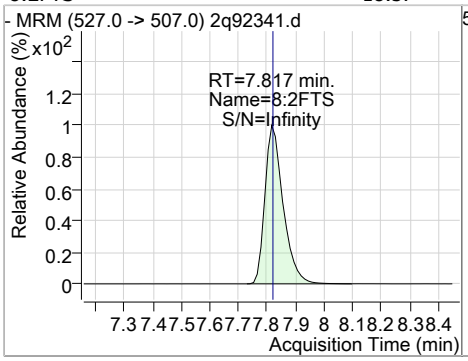
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.08	7.82	0.00	25286				

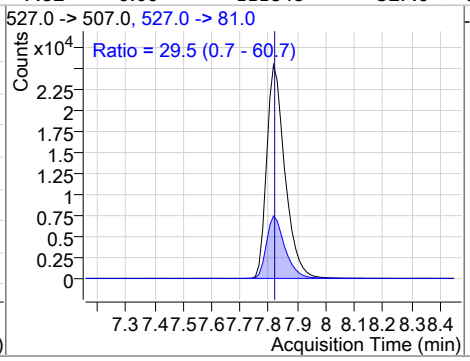


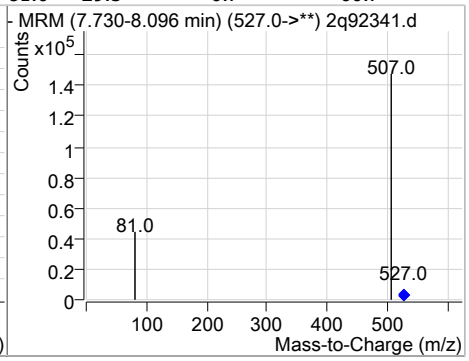




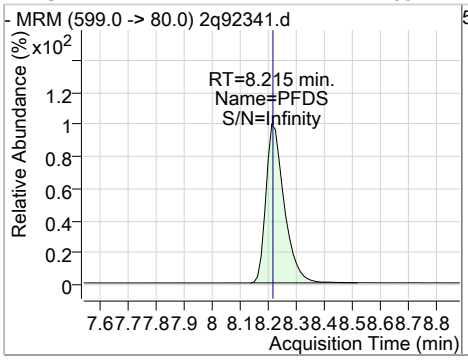
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.57	7.82	0.00	111848	527.0 -> 81.0	29.5	0.7	60.7

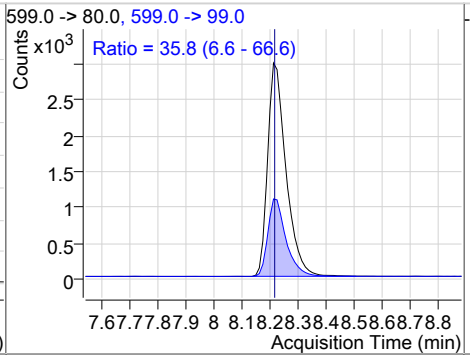


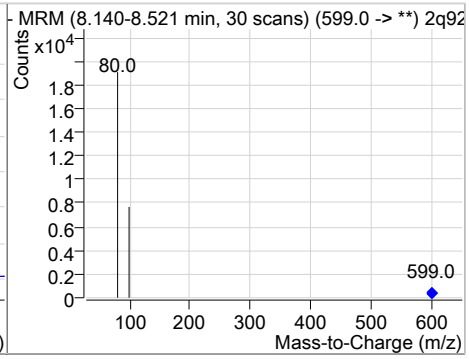




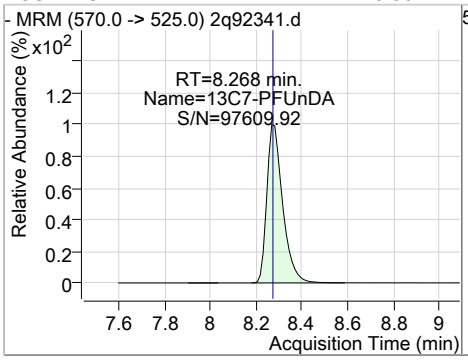
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.85	8.22	0.00	13482	599.0 -> 99.0	35.8	6.6	66.6

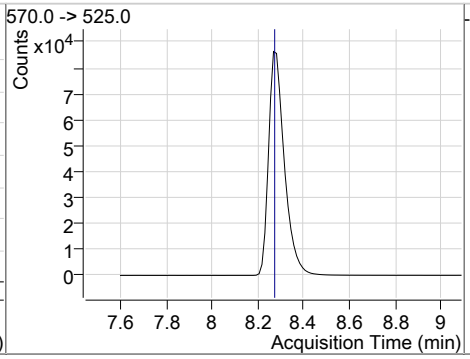


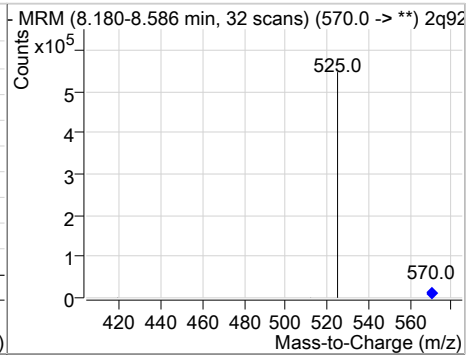




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.30	8.27	0.00	414002				

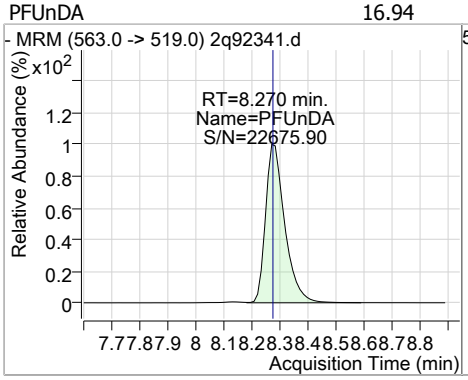


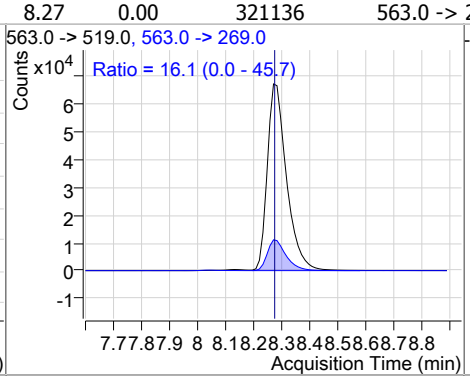


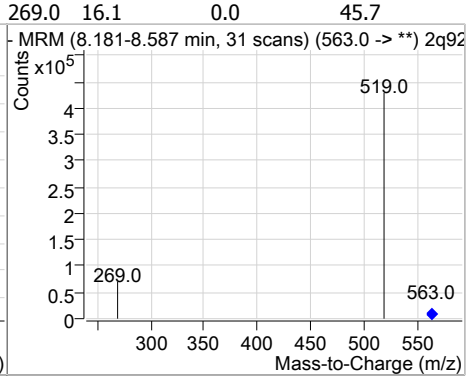


Perfluorinated Compounds by LC/MS/MS

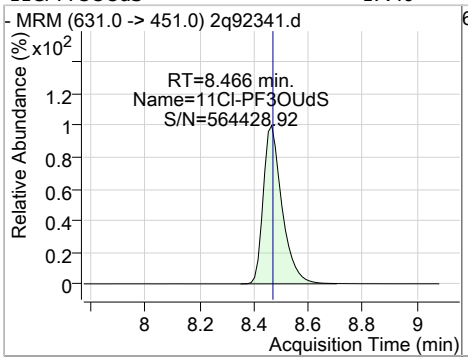
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.94	8.27	0.00	321136	563.0 -> 269.0	16.1	0.0	45.7

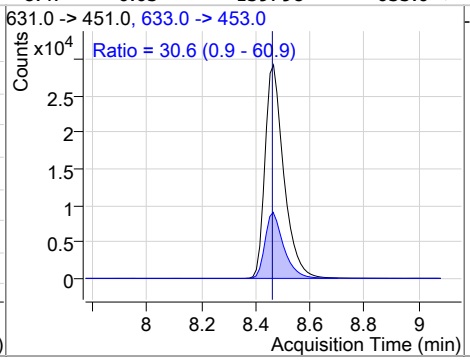


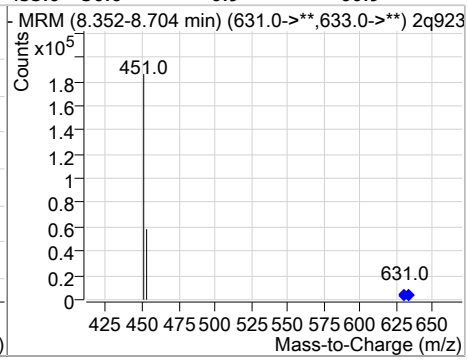




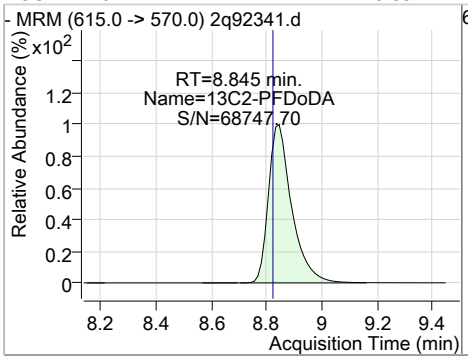
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.46	8.47	0.03	139798	633.0 -> 453.0	30.6	0.9	60.9

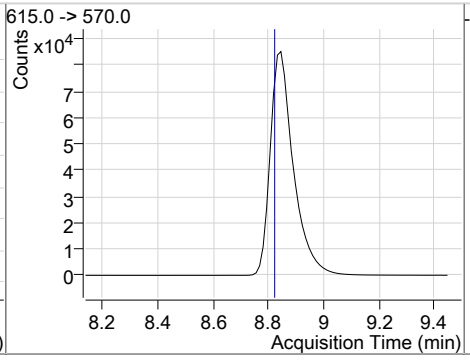


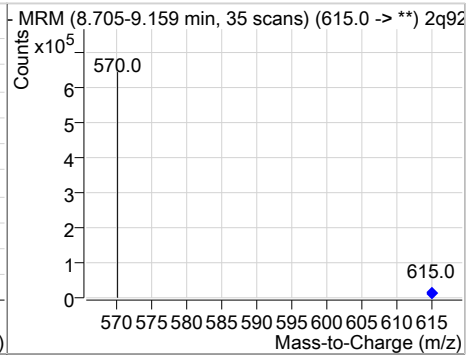




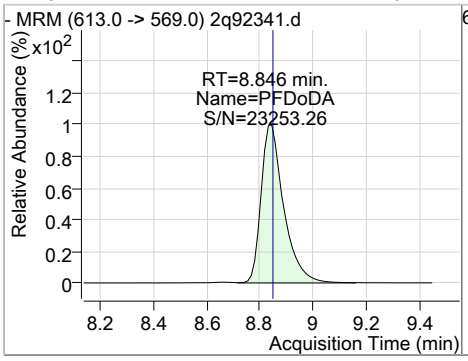
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.39	8.84	0.03	496725				

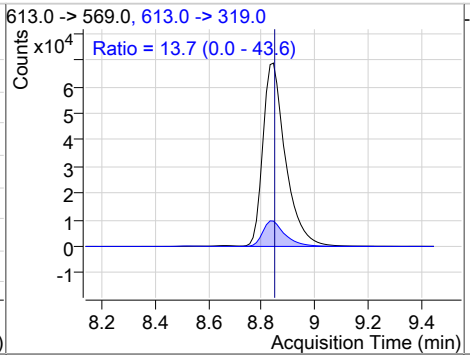


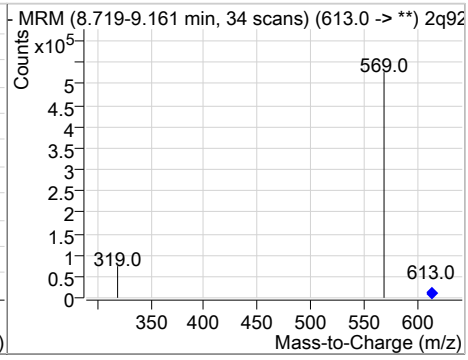




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	17.04	8.85	0.03	405996	613.0 -> 319.0	13.7	0.0	43.6

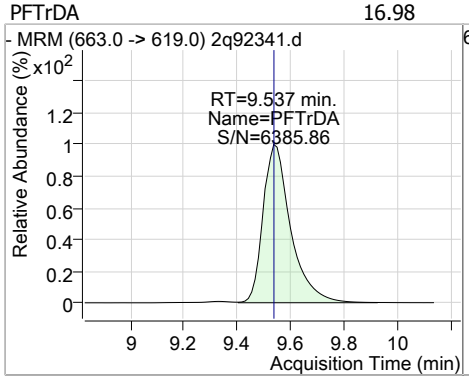


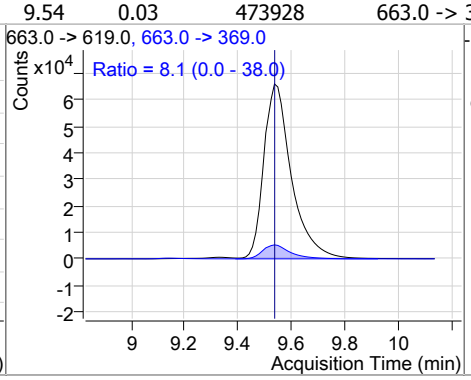


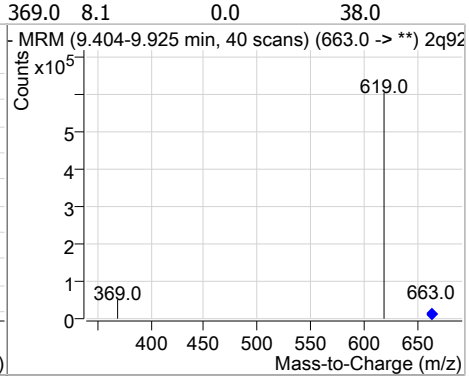


Perfluorinated Compounds by LC/MS/MS

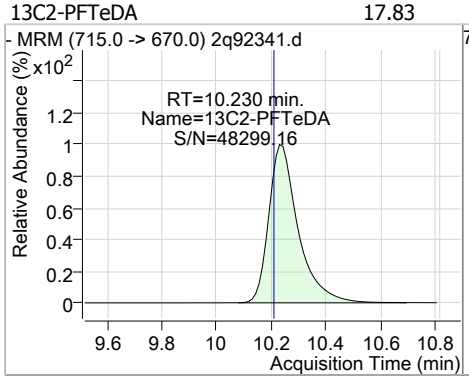
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.98	9.54	0.03	473928	663.0 -> 369.0	8.1	0.0	38.0

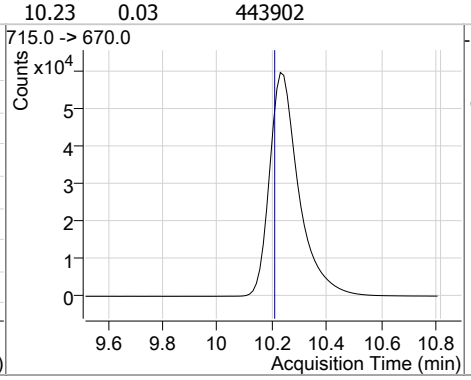


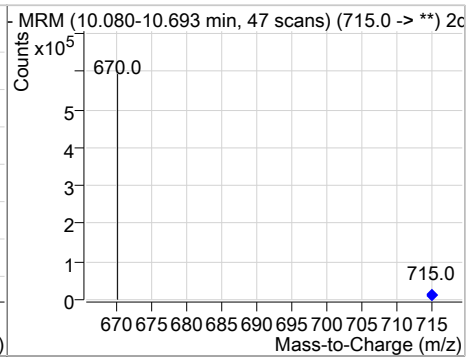




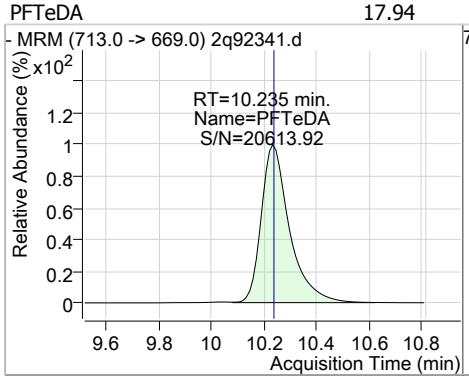
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.83	10.23	0.03	443902				

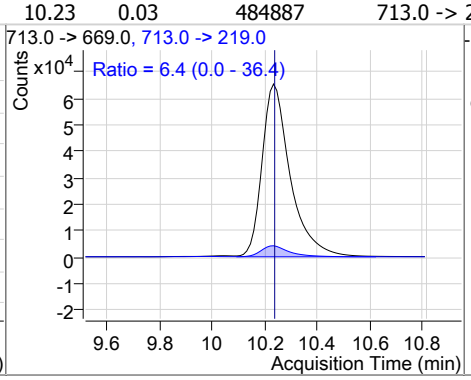


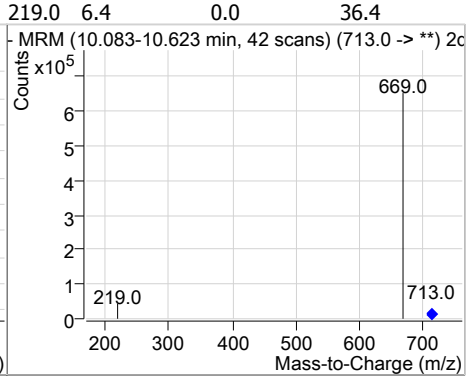




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.94	10.23	0.03	484887	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1294-CC1287
Lab FileID: 2Q92341.D
Injection Time: 06/03/22 11:25
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 10:57 James Boone
Supervisor approved: 06/05/22 18:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.60	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:09

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92342.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 11:45:43 AM
Sample Name : cc1287-1.0LL
Vial : P1-A3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

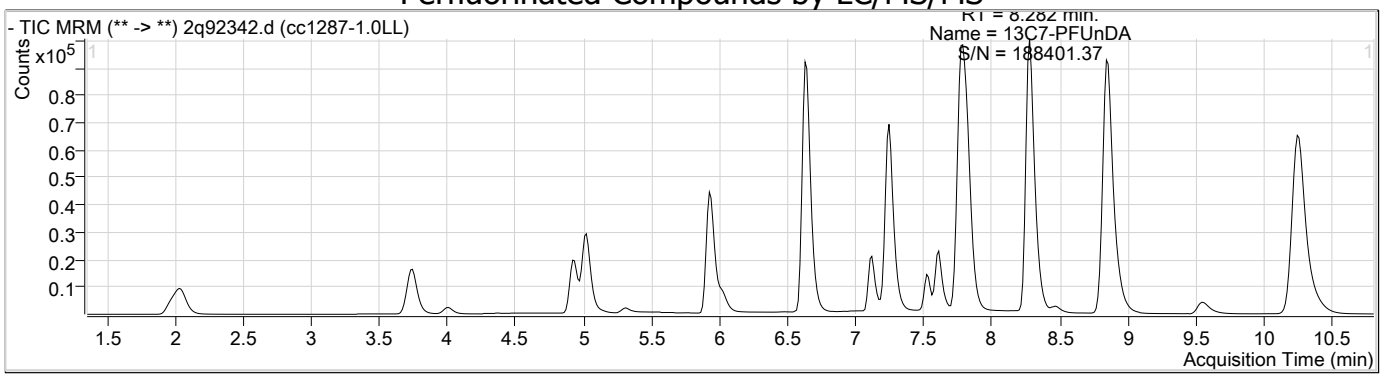
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	59770	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	71883	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	81757	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	119765	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	171338	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	235234	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	260929	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	346628	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	438267	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	504138	20.00	µg/L	0.027
M2-PFTeDA	10.243	715.0 -> 670.0	456508	20.00	µg/L	0.038
M8-FOSA	7.124	506.0 -> 78.0	69592	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	9589	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	13408	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	19208	20.00	µg/L	0.000
M2-4:2FTS	4.921	329.0 -> 81.0	8777	20.00	µg/L	-0.013
M2-6:2FTS	6.634	429.0 -> 81.0	18994	20.00	µg/L	0.000
M2-8:2FTS	7.829	529.0 -> 81.0	27132	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	71548	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	5047	20.00	µg/L	0.000
M3-MeFOSA	7.527	515.0 -> 169.0	23804	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	8777	18.87	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C2-6:2FTS	6.634	429.0 -> 81.0	18994	18.37	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%		
13C2-8:2FTS	7.829	529.0 -> 81.0	27132	18.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.6%		
13C2-PFDoDA	8.845	615.0 -> 570.0	504138	18.66	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C2-PFTeDA	10.243	715.0 -> 670.0	456508	18.34	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.7%		
13C3-PFBS	4.004	302.0 -> 99.0	9589	18.86	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C3-PFHxS	5.967	402.0 -> 99.0	13408	18.81	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.0%		
13C4-PFBA	2.027	217.0 -> 172.0	71883	18.61	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C4-PFHpA	5.929	367.0 -> 322.0	171338	18.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%		
d5-EtFOSAA	7.748	589.0 -> 419.0	59770	19.69	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C5-PFHxA	5.027	318.0 -> 273.0	119765	17.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C5-PFPeA	3.749	268.0 -> 223.0	81757	17.94	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

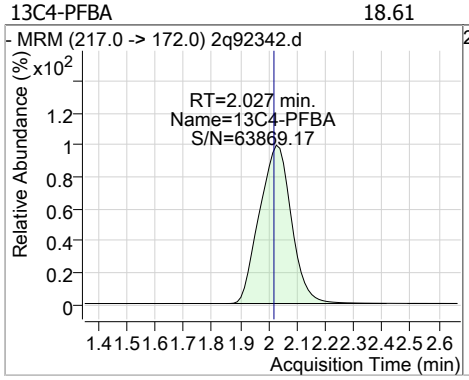
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.7%			
13C6-PFDA	7.779	519.0 -> 474.0	346628	19.03	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
13C7-PFUnDA	8.282	570.0 -> 525.0	438267	19.37	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%			
13C8-FOSA	7.124	506.0 -> 78.0	69592	18.91	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%			
13C8-PFOA	6.649	421.0 -> 376.0	235234	18.27	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%			
13C8-PFOS	7.225	507.0 -> 99.0	19208	18.51	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%			
13C9-PFNA	7.252	472.0 -> 427.0	260929	17.89	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
d3-MeFOSAA	7.610	573.0 -> 419.0	71548	18.66	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	5047	19.38	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%			
d3-MeFOSA	7.527	515.0 -> 169.0	23804	17.01	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.0%			
Target Compounds							**QValue**
4:2FTS	4.925	327.0 -> 307.0	4298	0.93	µg/L		93
6:2FTS	6.635	427.0 -> 407.0	7109	1.02	µg/L		100
8:2FTS	7.817	527.0 -> 507.0	6511	1.01	µg/L		98
EtFOSAA	7.748	584.0 -> 419.0	3067	1.03	µg/L	m	99
FOSA	7.125	498.0 -> 78.0	3501	0.96	µg/L		96
MeFOSAA	7.611	570.0 -> 419.0	3431	1.04	µg/L	m	97
PFBA	2.033	213.0 -> 169.0	1834	1.00	µg/L		100
PFBS	3.994	299.0 -> 80.0	1578	0.99	µg/L		99
PFDA	7.780	513.0 -> 469.0	16959	0.97	µg/L		98
PFDoDA	8.846	613.0 -> 569.0	24194	1.00	µg/L		100
PFDS	8.228	599.0 -> 80.0	860	1.08	µg/L		96
PFHpA	5.930	363.0 -> 319.0	14286	1.02	µg/L		99
PFHpS	6.645	449.0 -> 80.0	1753	1.11	µg/L		98
PFHxA	5.028	313.0 -> 269.0	4451	1.00	µg/L		98
PFHxS	5.967	399.0 -> 80.0	1753	1.04	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	15478	1.07	µg/L		100
PFNS	7.738	549.0 -> 80.0	1457	1.08	µg/L		98
PFOA	6.649	413.0 -> 369.0	13003	1.02	µg/L		98
PFOS	7.225	499.0 -> 80.0	1771	1.05	µg/L	m	95
PFPeA	3.751	263.0 -> 219.0	6705	1.06	µg/L		100
PFPeS	5.132	349.0 -> 80.0	1137	1.04	µg/L		93
PFTeDA	10.247	713.0 -> 669.0	28809	1.04	µg/L		99
PFTrDA	9.549	663.0 -> 619.0	27865	0.98	µg/L		99
PFUnDA	8.282	563.0 -> 519.0	18759	0.93	µg/L		98
11Cl-PF3OUdS	8.466	631.0 -> 451.0	8091	1.00	µg/L		99
9Cl-PF3ONS	7.499	531.0 -> 351.0	1804	0.96	µg/L		96
ADONA	6.032	377.0 -> 251.0	17171	0.97	µg/L		100
HFPO-DA	5.314	329.0 -> 169.0	1910	1.05	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	1066	1.06	µg/L		98

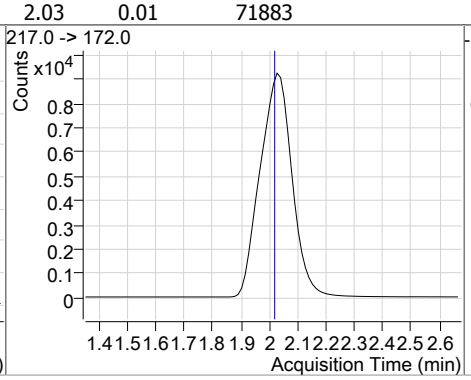
= Qualifier out of range, m = manually integrated, + = Area summed

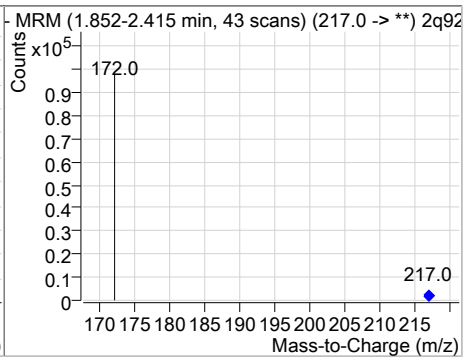
Perfluorinated Compounds by LC/MS/MS



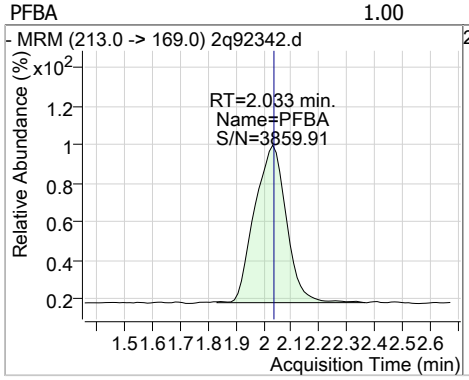
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.61	2.03	0.01	71883				

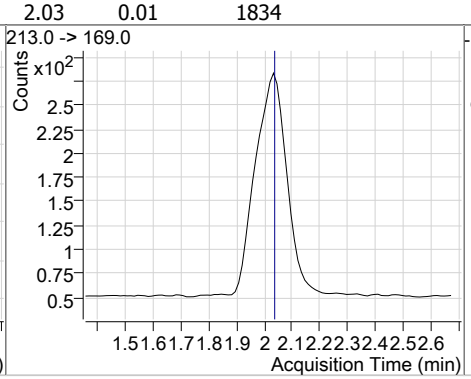


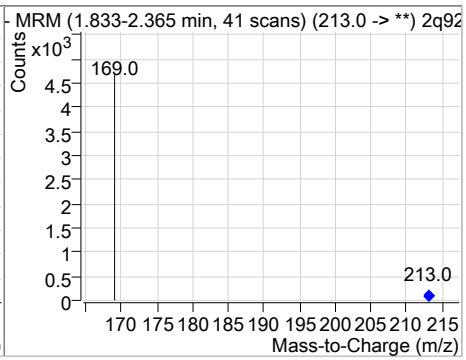




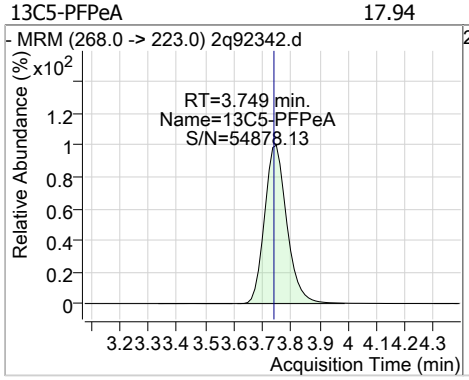
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.00	2.03	0.01	1834				

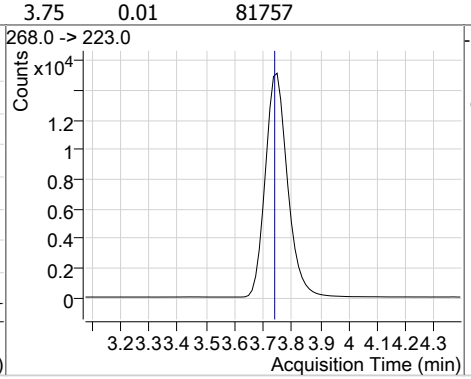


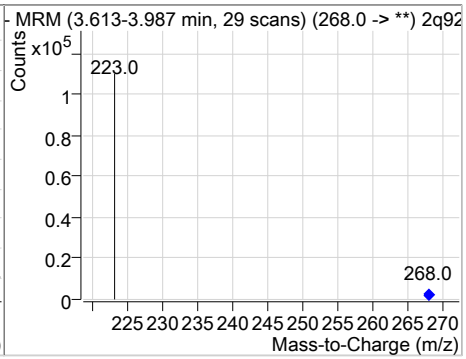




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.94	3.75	0.01	81757				

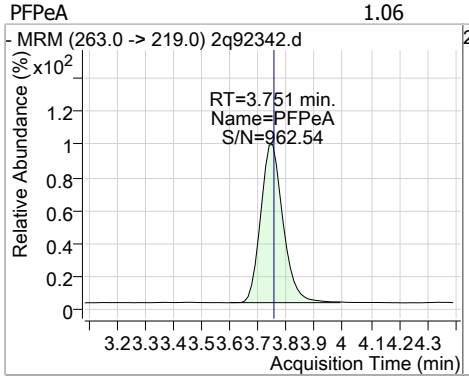


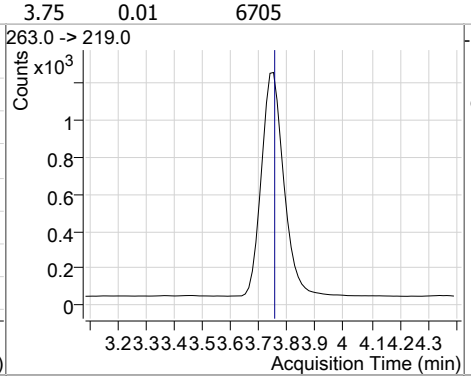


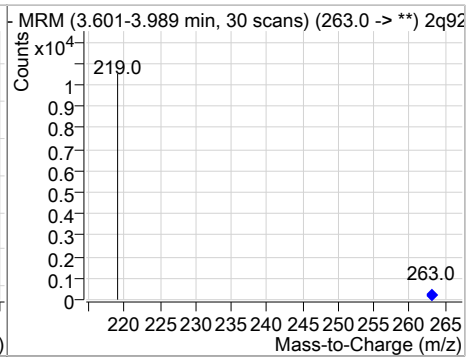


Perfluorinated Compounds by LC/MS/MS

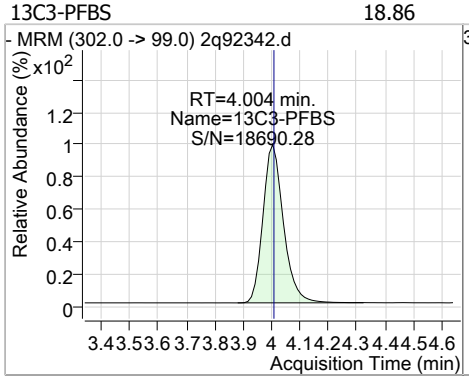
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.06	3.75	0.01	6705				

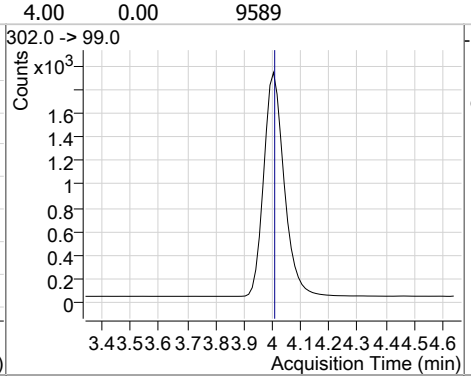


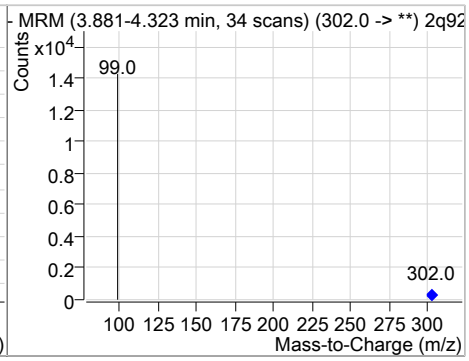




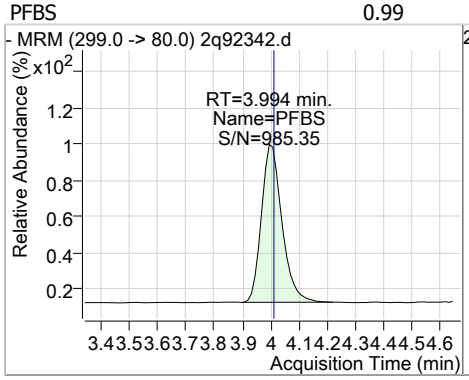
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.86	4.00	0.00	9589				

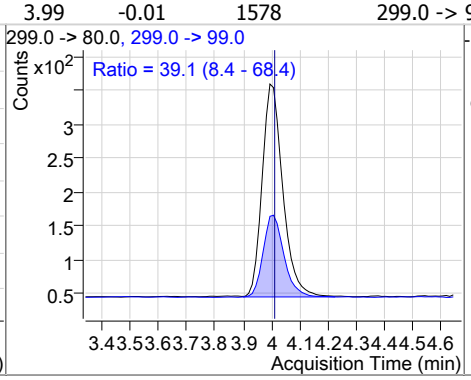


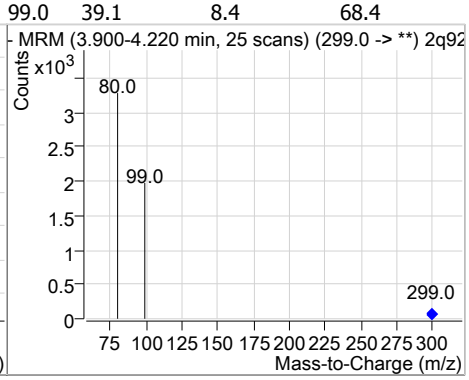




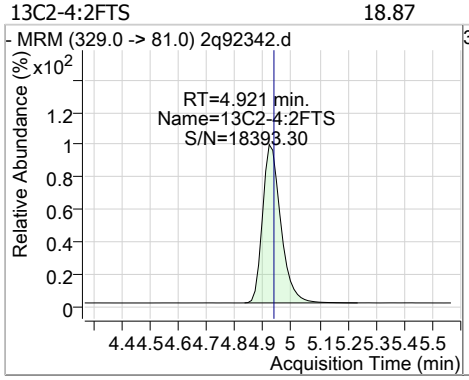
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.99	3.99	-0.01	1578	299.0 -> 99.0	39.1	8.4	68.4

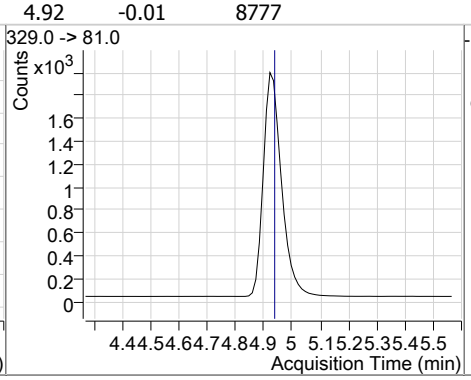


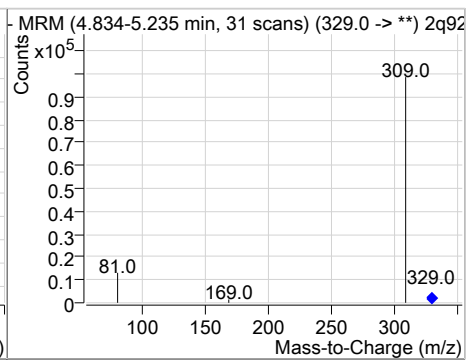




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.87	4.92	-0.01	8777				

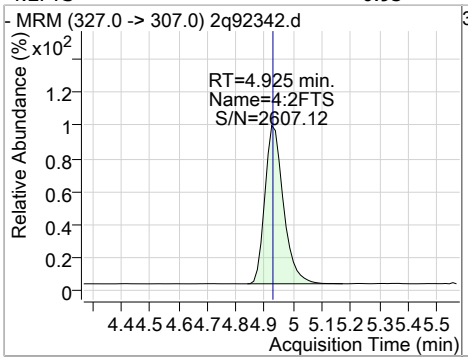


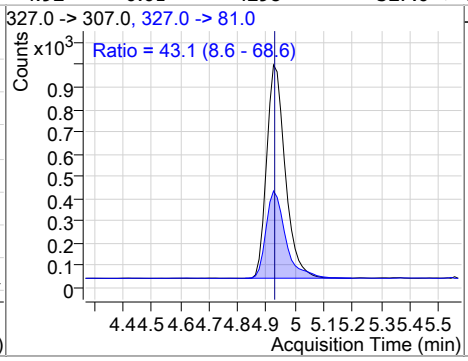


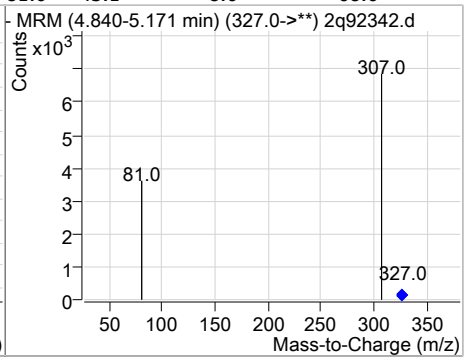


Perfluorinated Compounds by LC/MS/MS

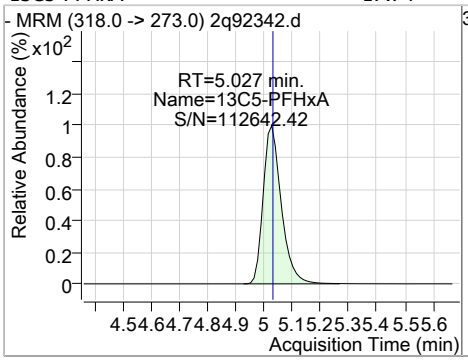
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.93	4.92	-0.01	4298	327.0 -> 81.0	43.1	8.6	68.6

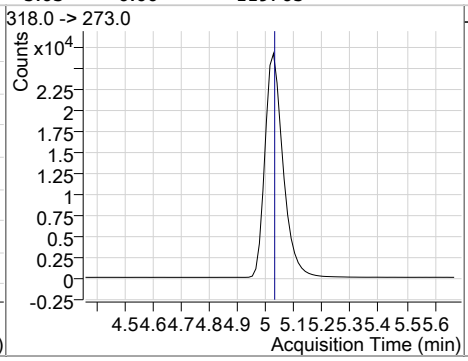


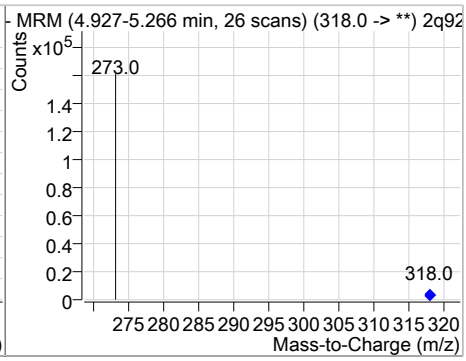




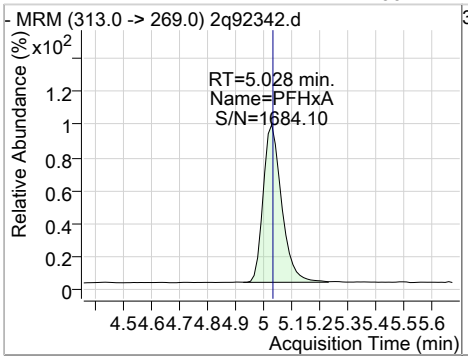
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.74	5.03	0.00	119765				

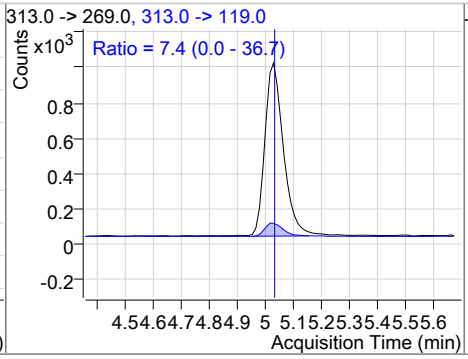


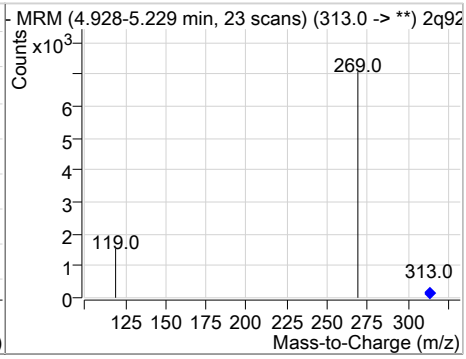




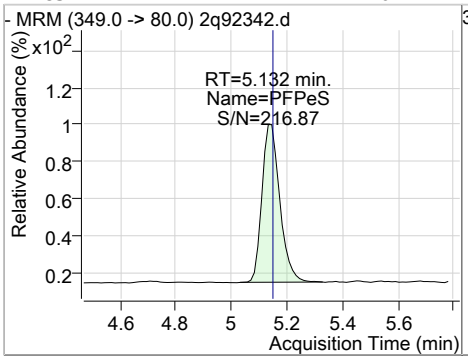
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.00	5.03	0.00	4451	313.0 -> 119.0	7.4	0.0	36.7

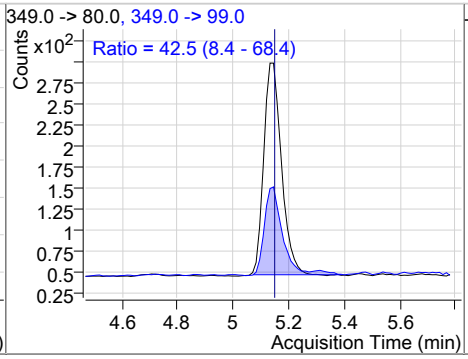


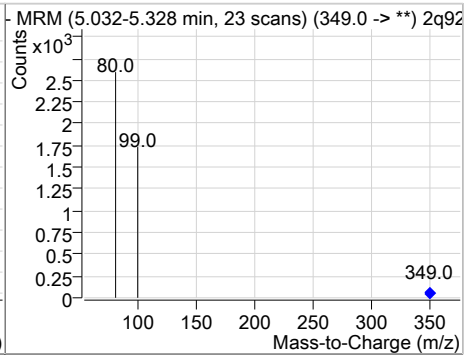




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.04	5.13	-0.01	1137	349.0 -> 99.0	42.5	8.4	68.4

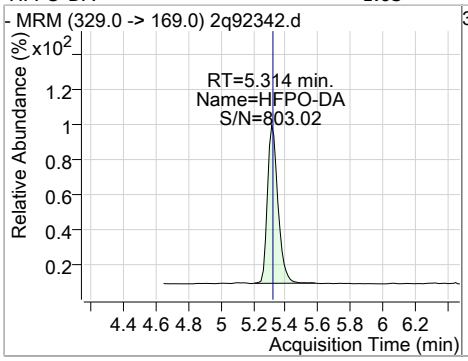


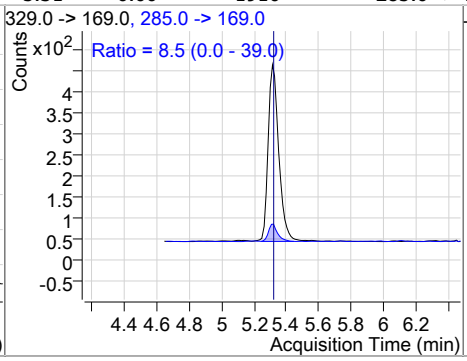


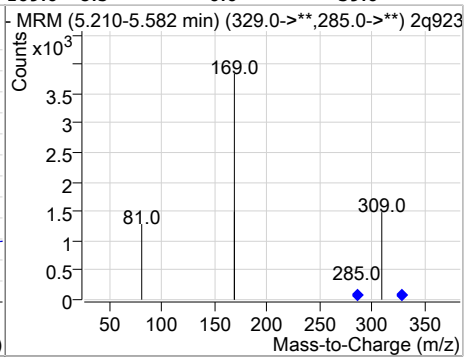


Perfluorinated Compounds by LC/MS/MS

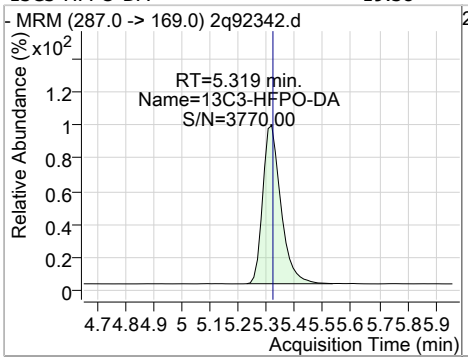
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.05	5.31	0.00	1910	285.0 -> 169.0	8.5	0.0	39.0

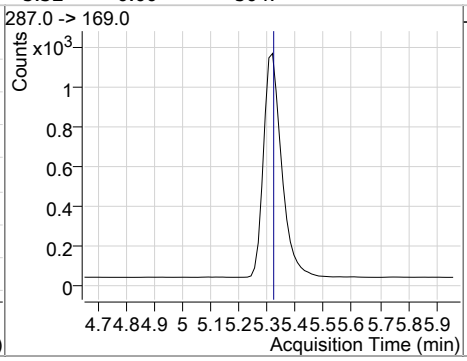


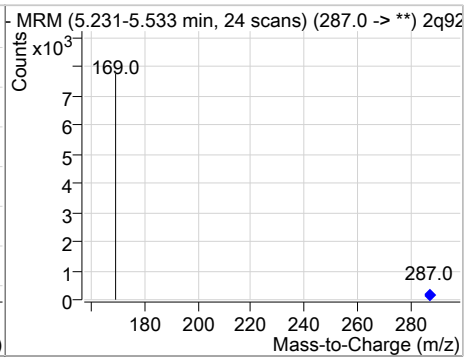




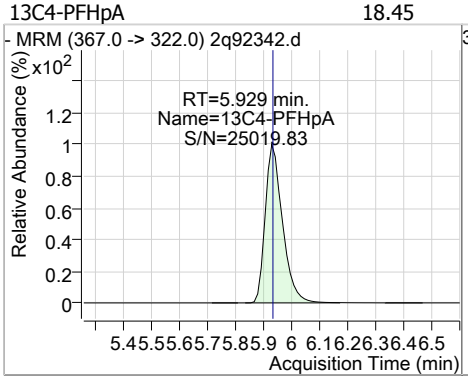
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.38	5.32	0.00	5047				

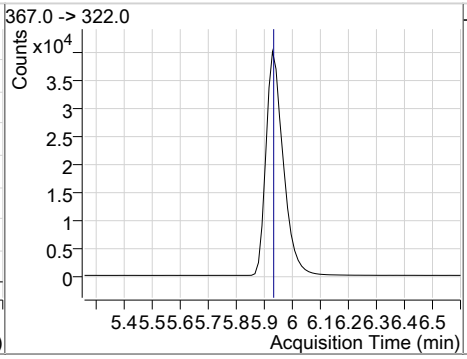


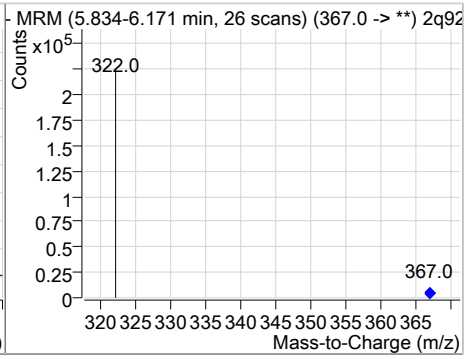




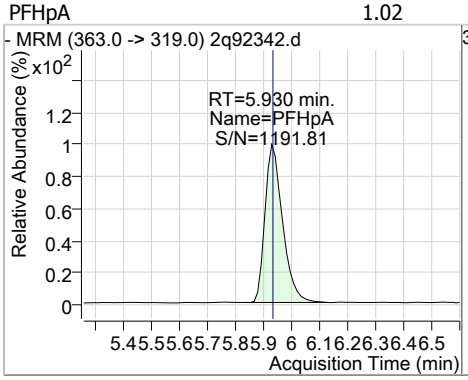
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.45	5.93	0.00	171338				

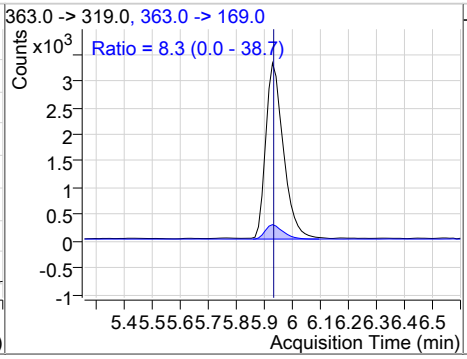


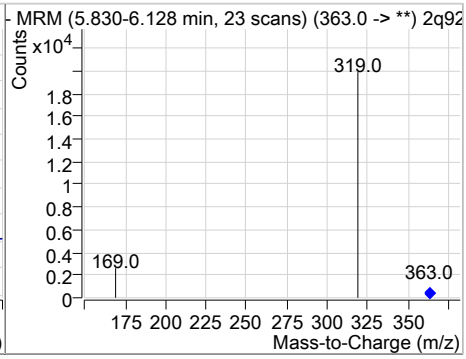




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.02	5.93	0.00	14286	363.0 -> 169.0	8.3	0.0	38.7

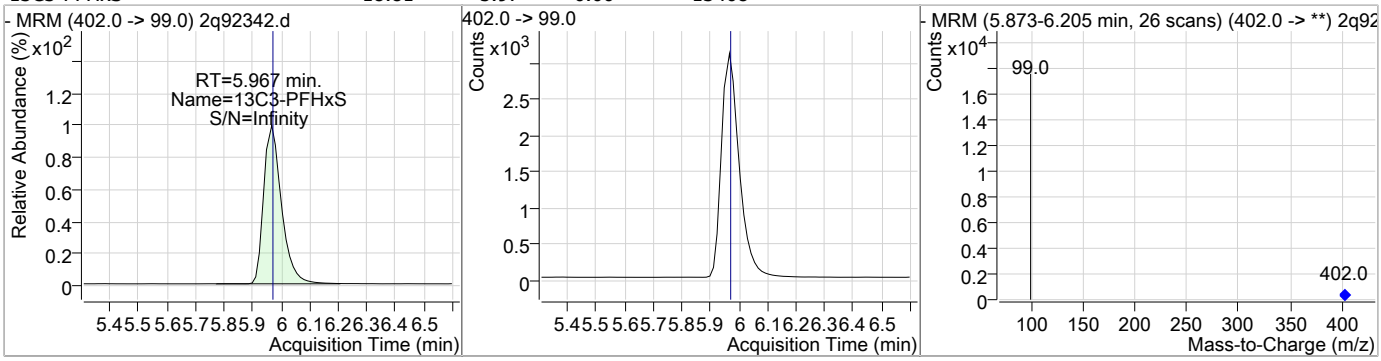




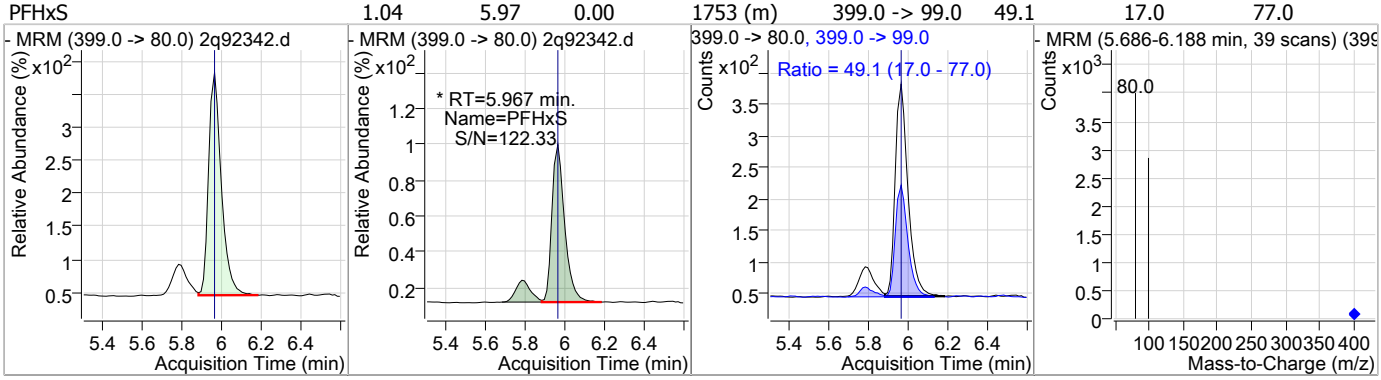


Perfluorinated Compounds by LC/MS/MS

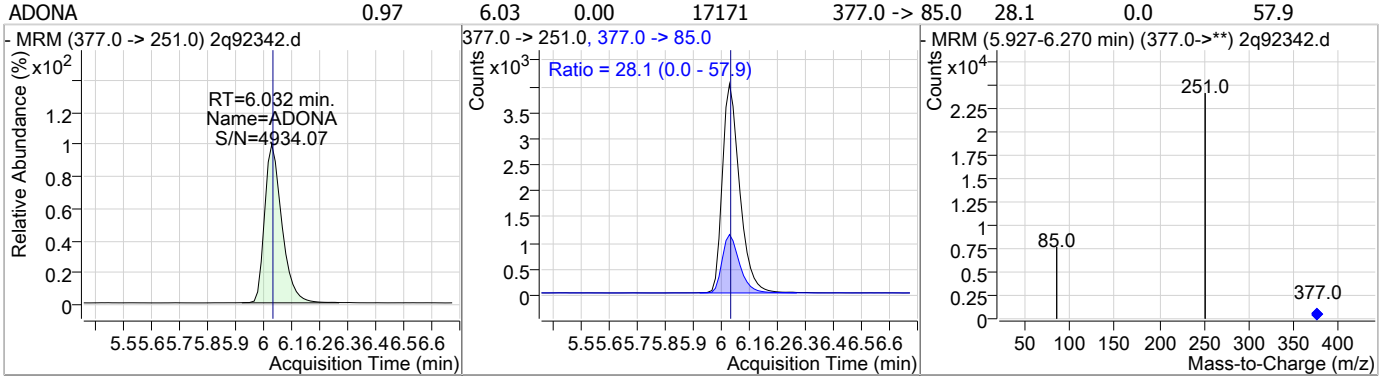
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.81	5.97	0.00	13408				



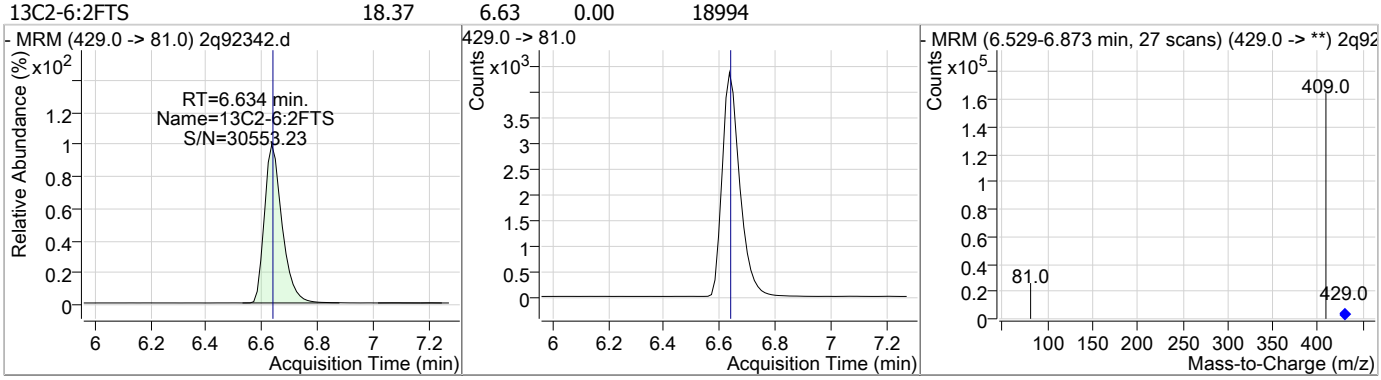
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.04	5.97	0.00	1753 (m)	399.0 -> 99.0	49.1	17.0	77.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.97	6.03	0.00	17171	377.0 -> 85.0	28.1	0.0	57.9

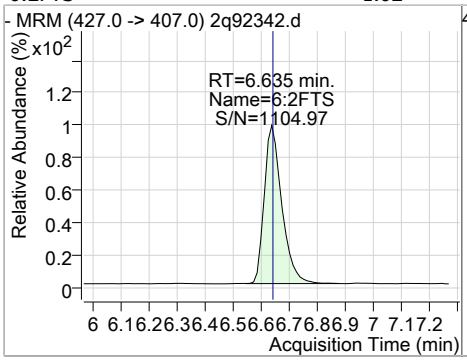


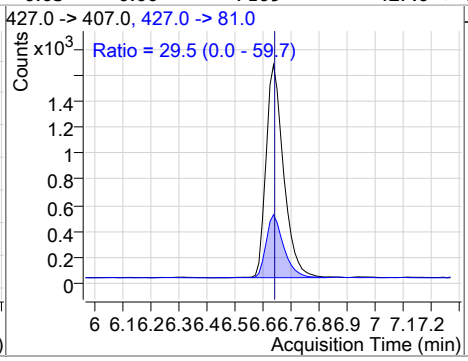
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.37	6.63	0.00	18994				

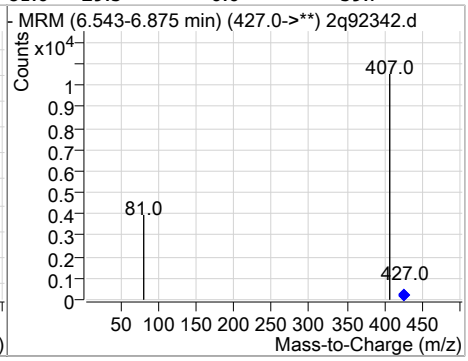


Perfluorinated Compounds by LC/MS/MS

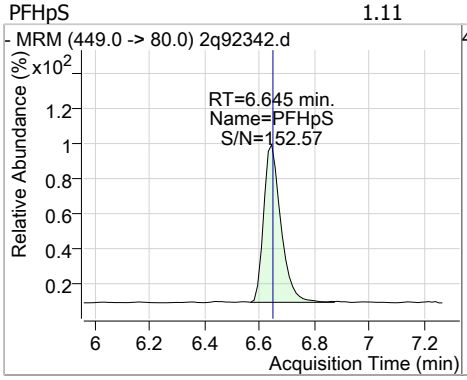
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.02	6.63	0.00	7109	427.0 -> 81.0	29.5	0.0	59.7

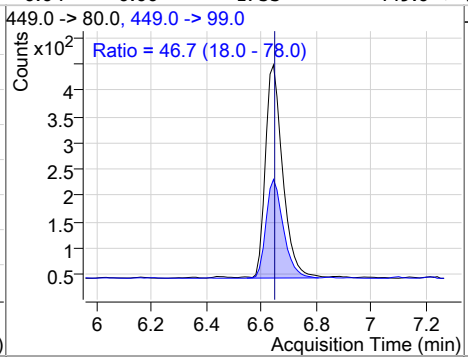


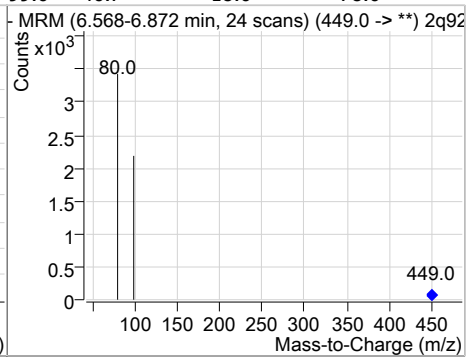




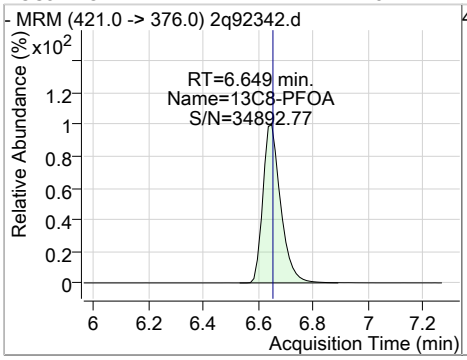
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.11	6.64	0.00	1753	449.0 -> 99.0	46.7	18.0	78.0

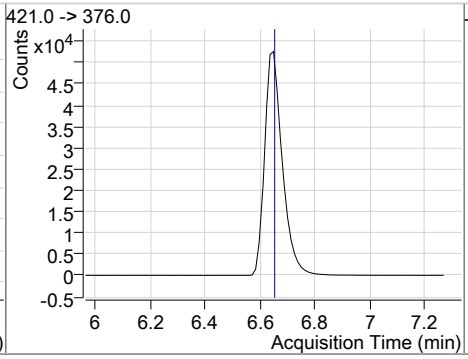


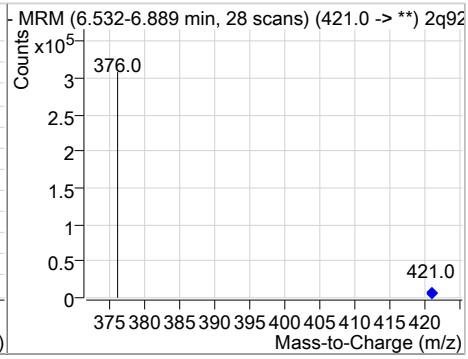




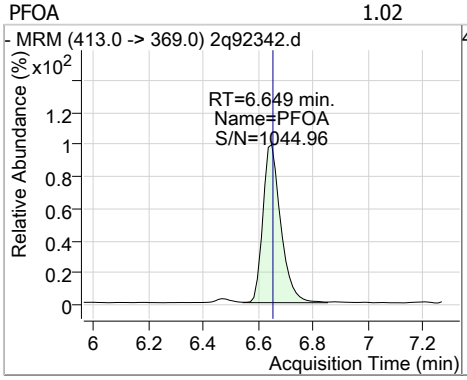
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.27	6.65	0.00	235234				

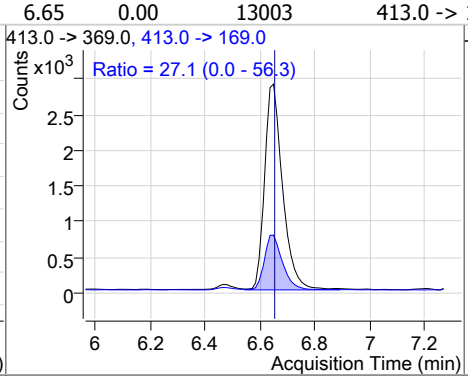


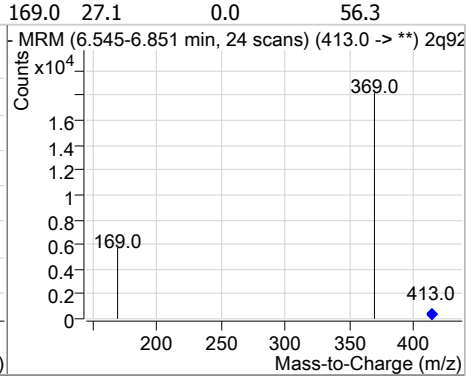




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.02	6.65	0.00	13003	413.0 -> 169.0	27.1	0.0	56.3

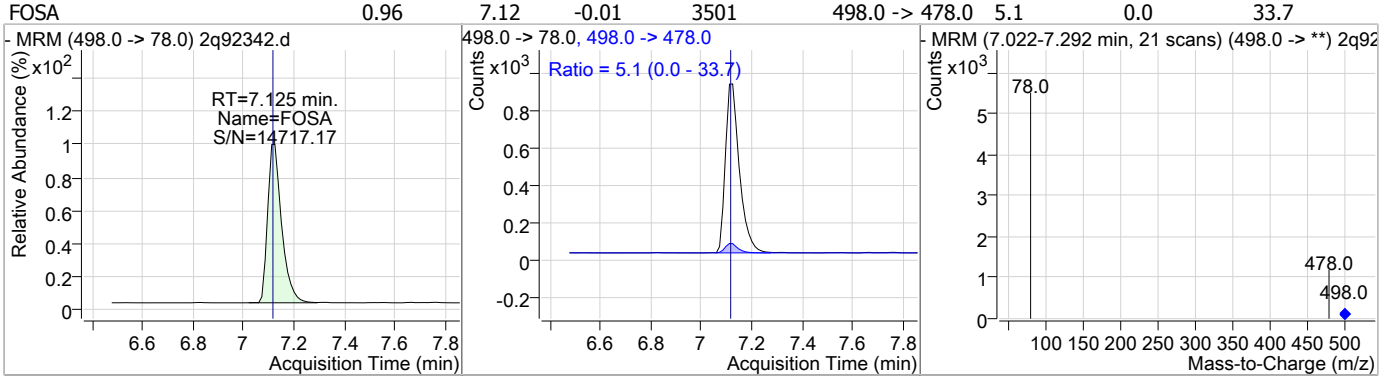




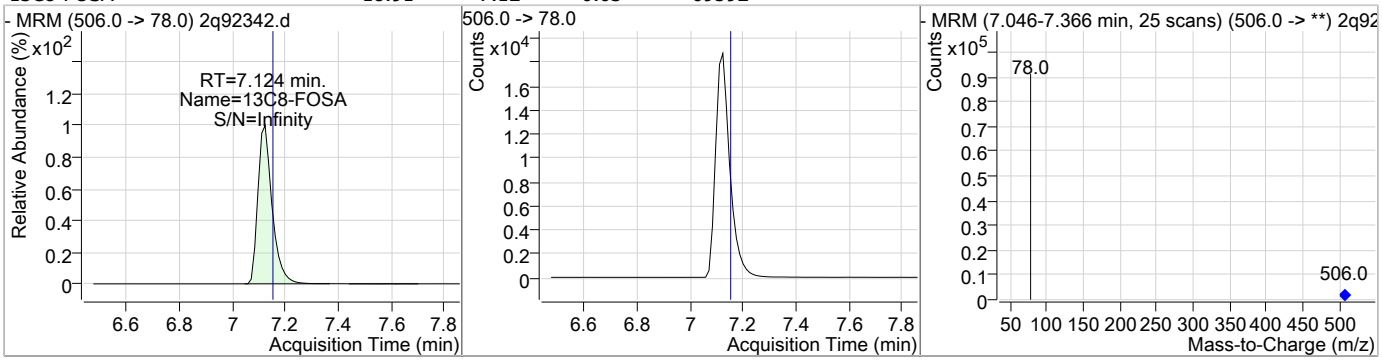


Perfluorinated Compounds by LC/MS/MS

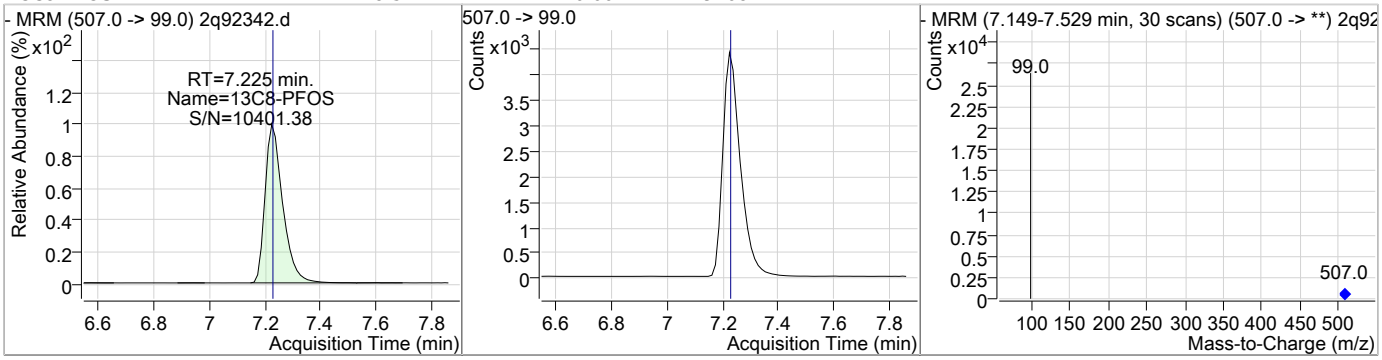
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.96	7.12	-0.01	3501	498.0 -> 478.0	5.1	0.0	33.7



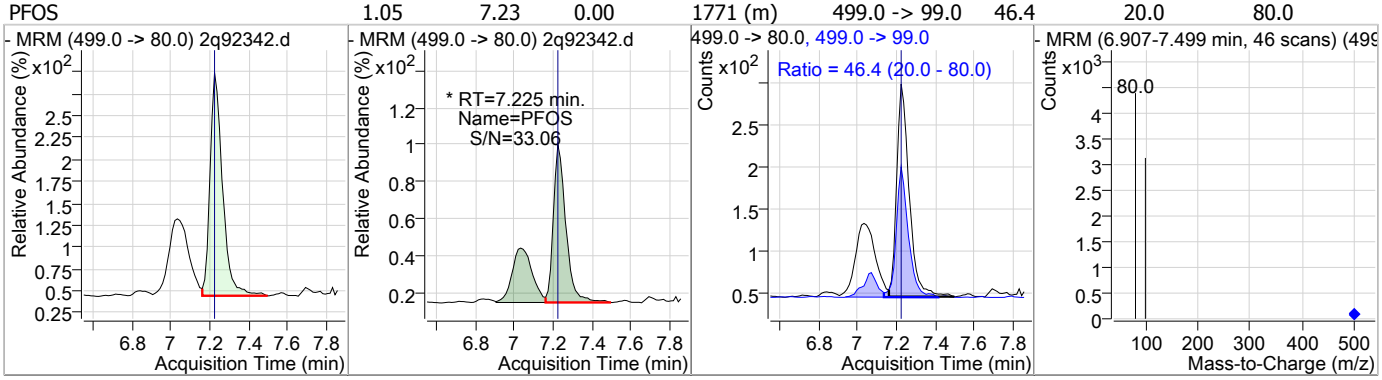
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.91	7.12	-0.03	69592				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.51	7.22	0.00	19208				

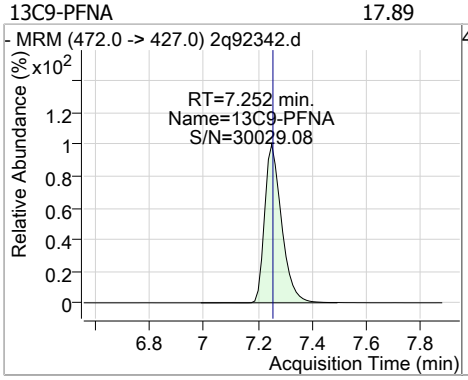


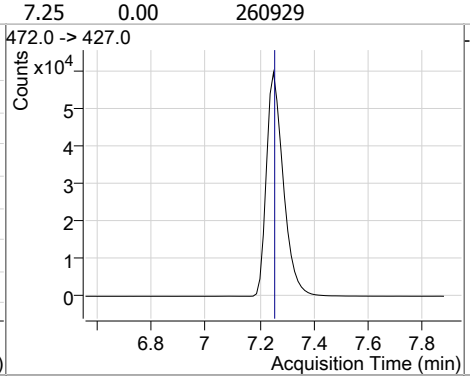
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.05	7.23	0.00	1771 (m)	499.0 -> 99.0	46.4	20.0	80.0

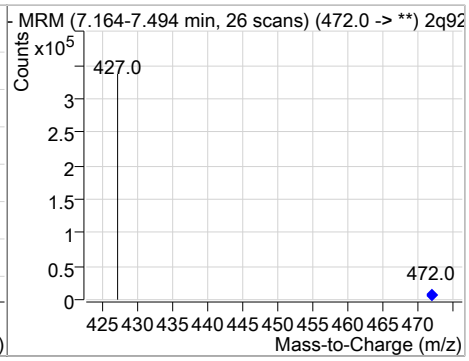


Perfluorinated Compounds by LC/MS/MS

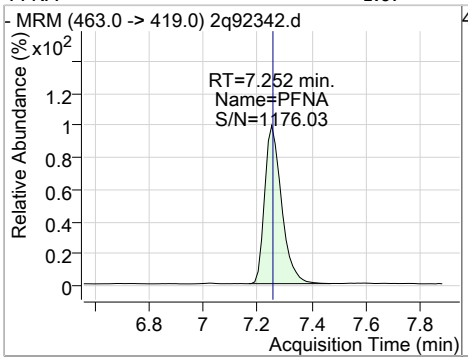
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.89	7.25	0.00	260929				

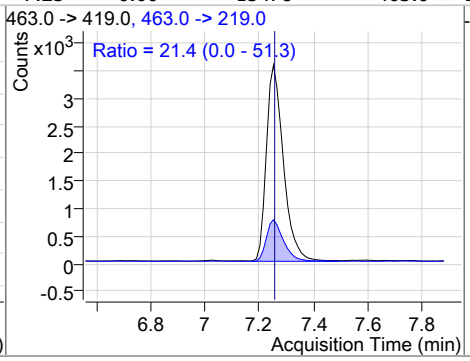


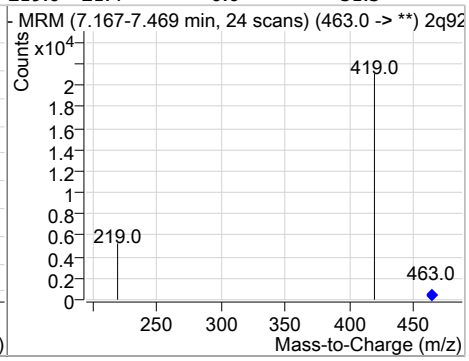




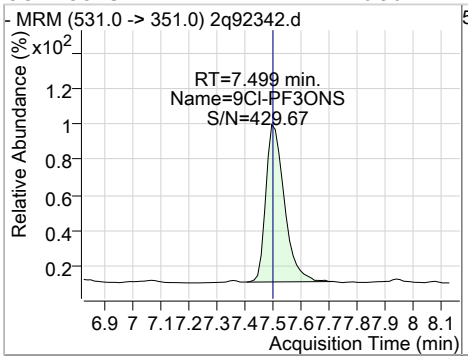
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.07	7.25	0.00	15478	463.0 -> 219.0	21.4	0.0	51.3

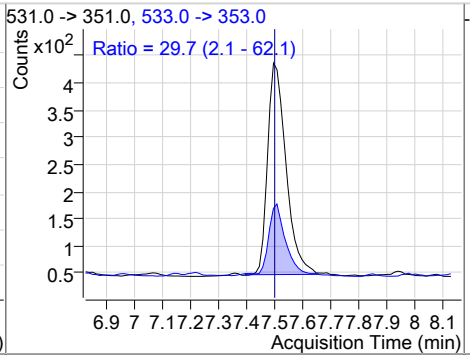


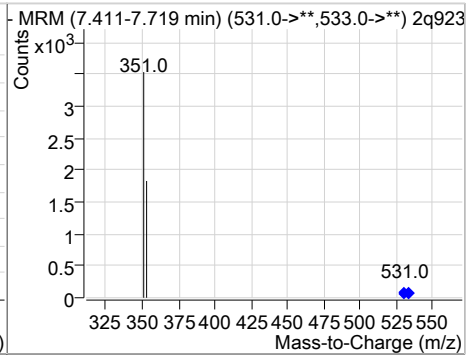




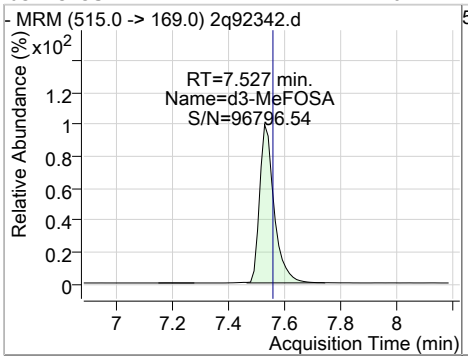
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.96	7.50	0.00	1804	533.0 -> 353.0	29.7	2.1	62.1

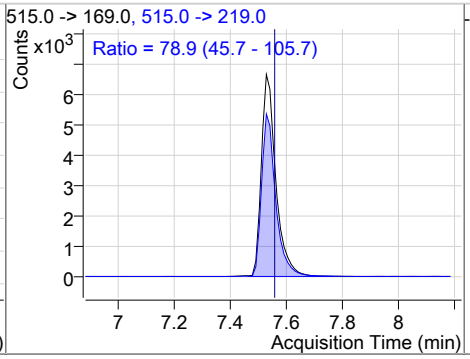


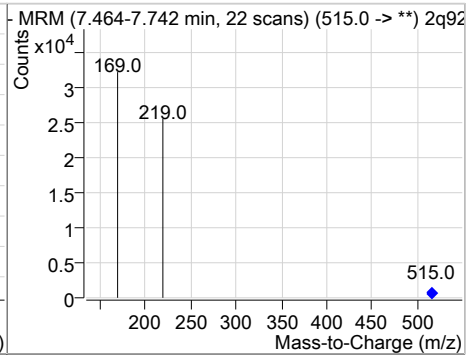




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.01	7.53	-0.03	23804	515.0 -> 219.0	78.9	45.7	105.7

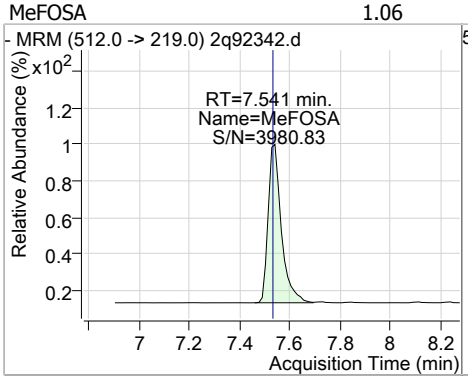


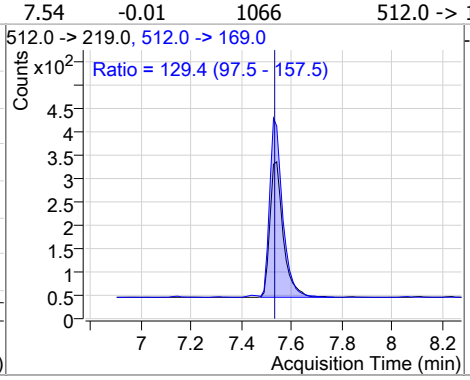


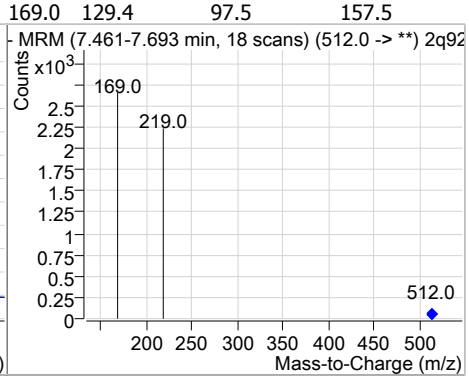


Perfluorinated Compounds by LC/MS/MS

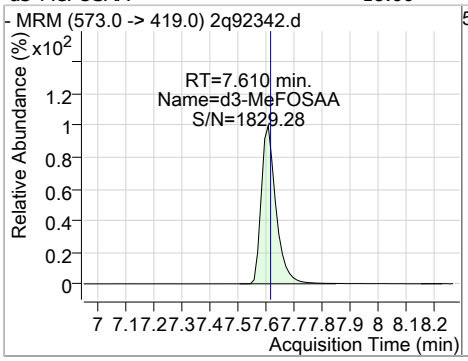
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.06	7.54	-0.01	1066	512.0 -> 169.0	129.4	97.5	157.5

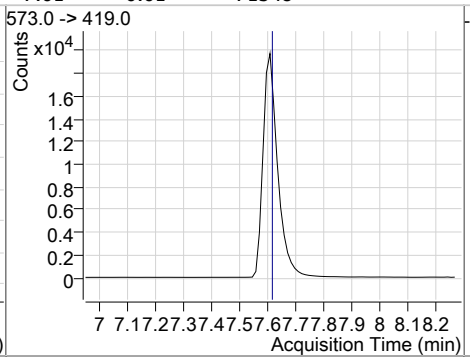


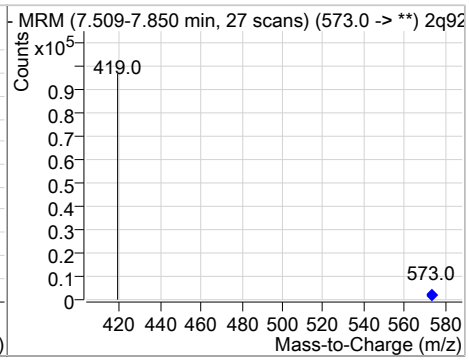




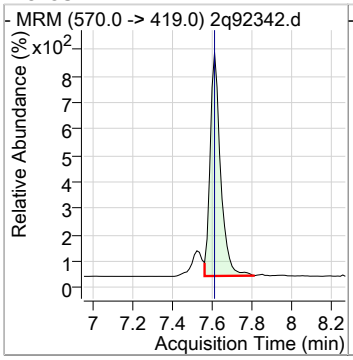
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.66	7.61	-0.01	71548				

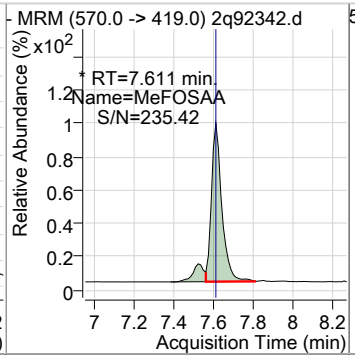


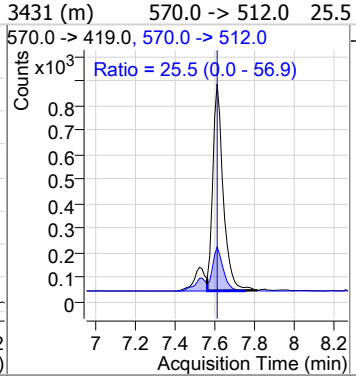


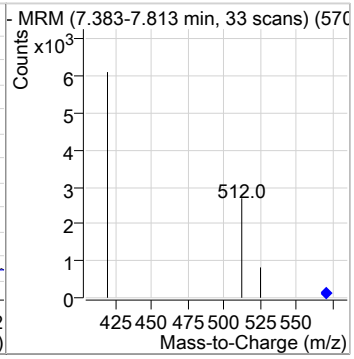


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.04	7.61	-0.01	3431 (m)	570.0 -> 512.0	25.5	0.0	56.9

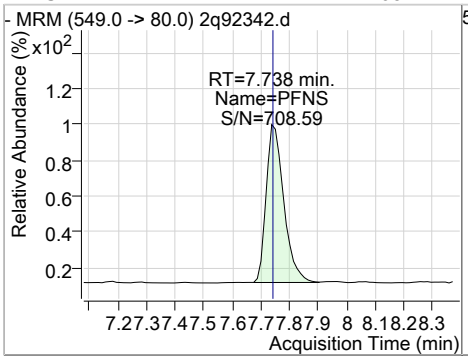


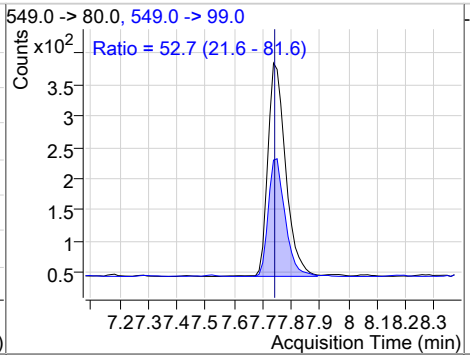


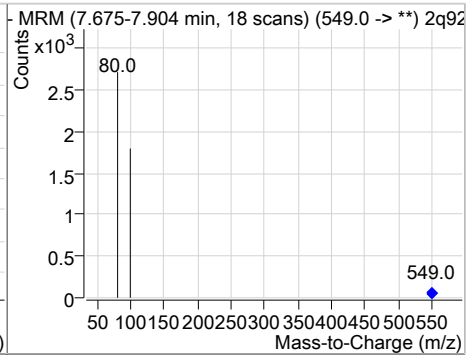




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.08	7.74	0.00	1457	549.0 -> 99.0	52.7	21.6	81.6

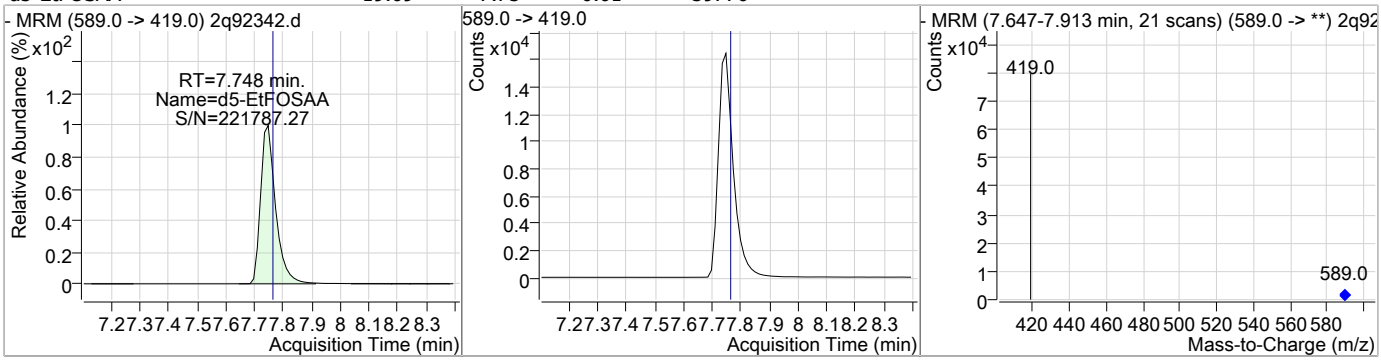




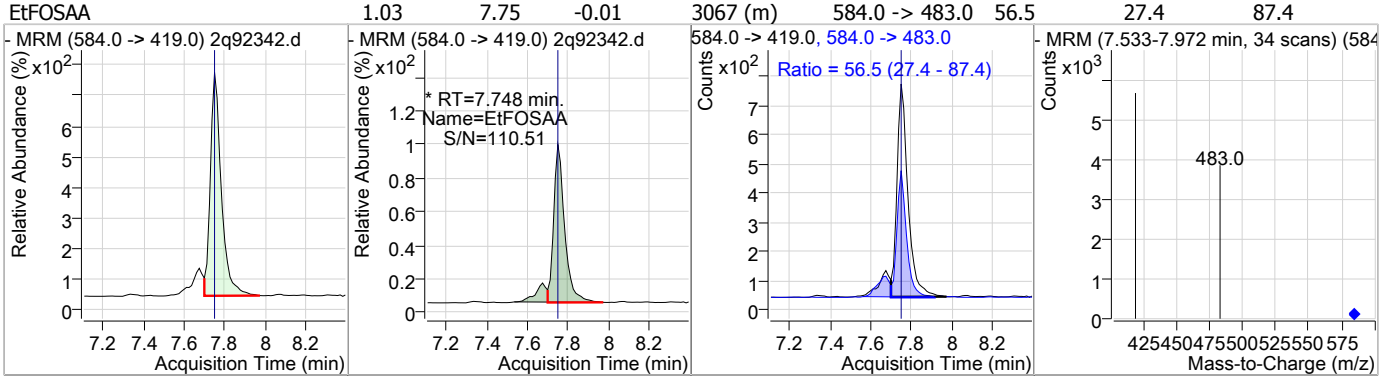


Perfluorinated Compounds by LC/MS/MS

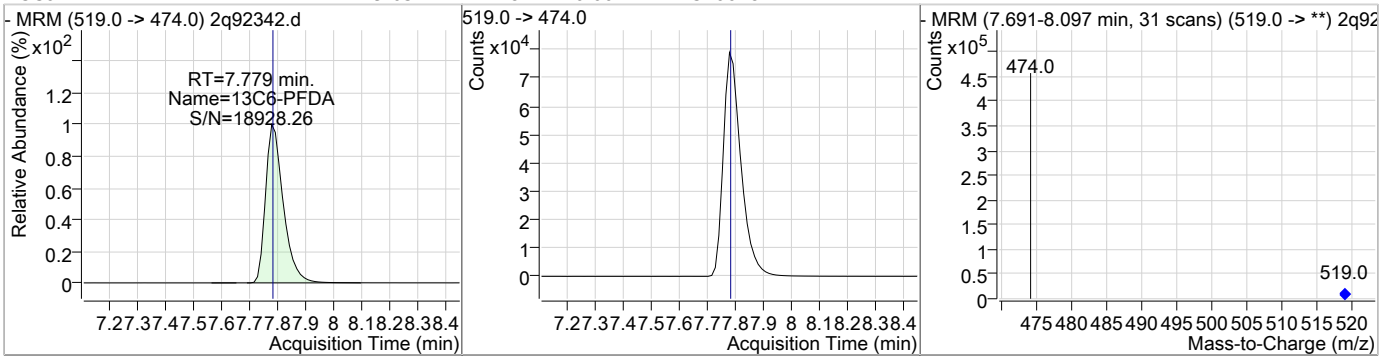
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	19.69	7.75	-0.01	59770				



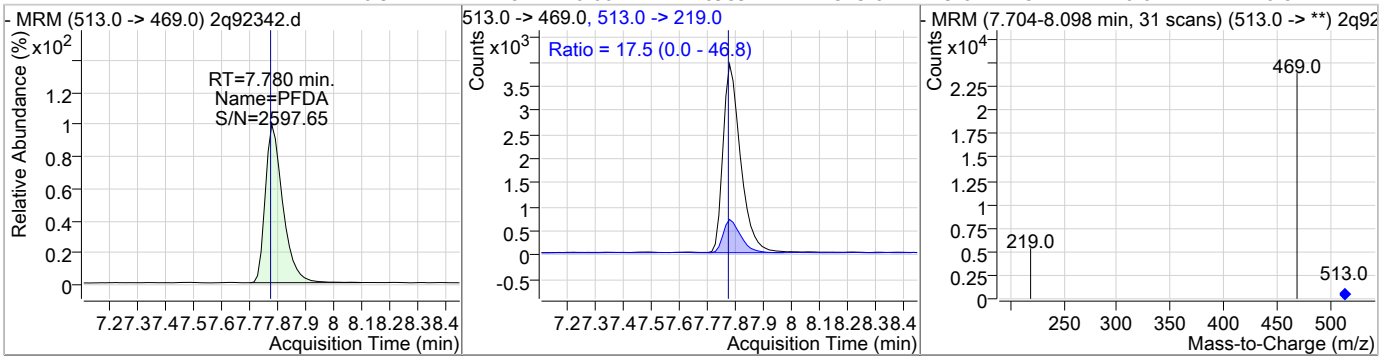
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.03	7.75	-0.01	3067 (m)	584.0 -> 483.0	56.5	27.4	87.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.03	7.78	0.00	346628				

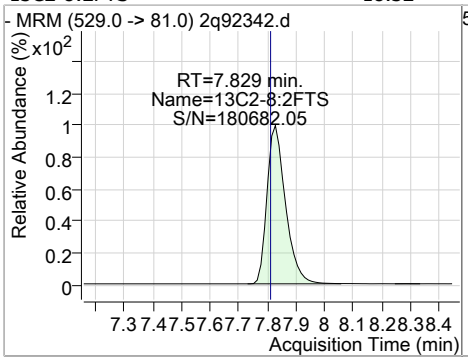


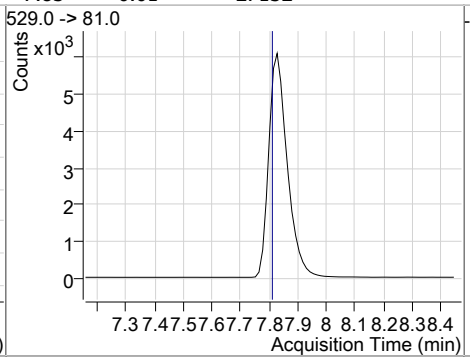
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.97	7.78	0.00	16959	513.0 -> 219.0	17.5	0.0	46.8

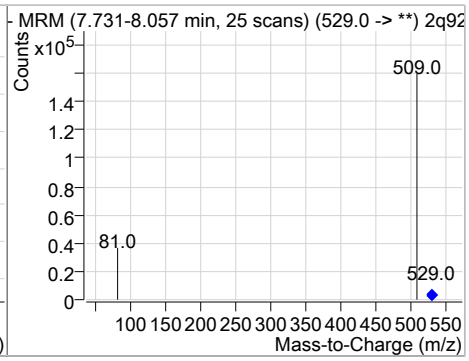


Perfluorinated Compounds by LC/MS/MS

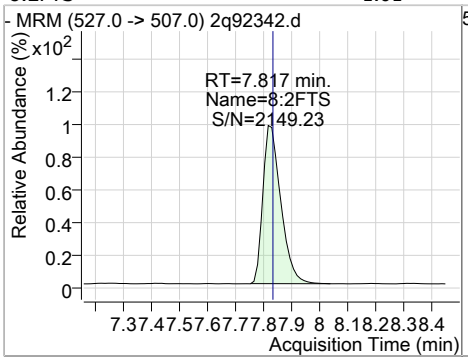
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.32	7.83	0.01	27132				

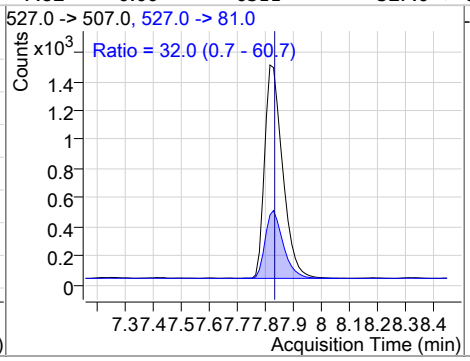


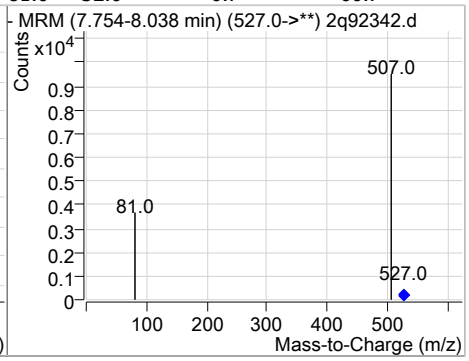




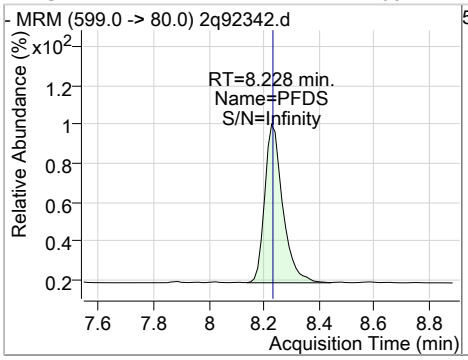
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.01	7.82	0.00	6511	527.0 -> 81.0	32.0	0.7	60.7

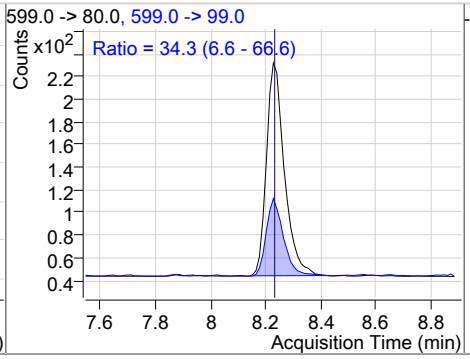


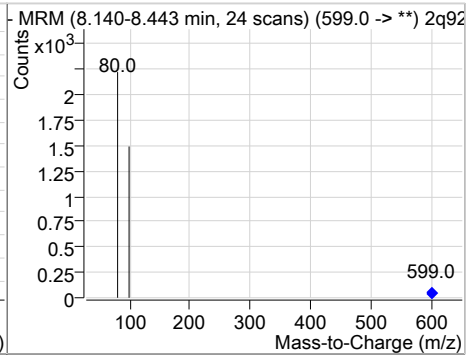




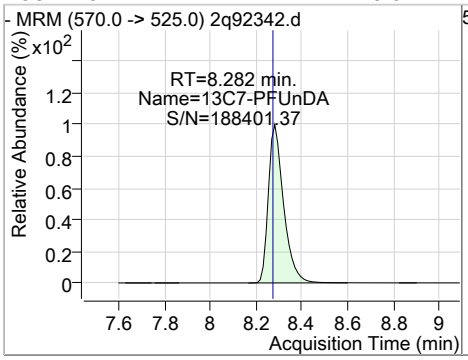
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.08	8.23	0.01	860	599.0 -> 99.0	34.3	6.6	66.6

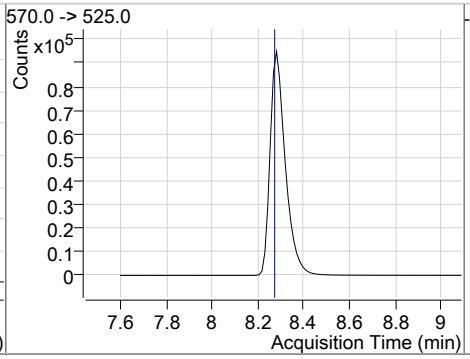


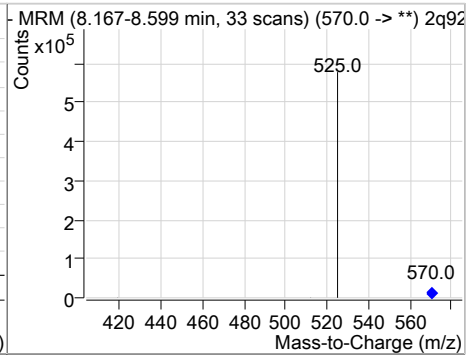




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.37	8.28	0.01	438267				

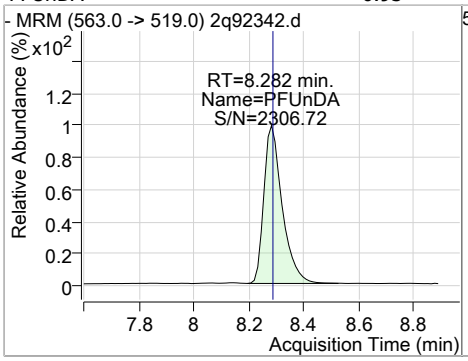


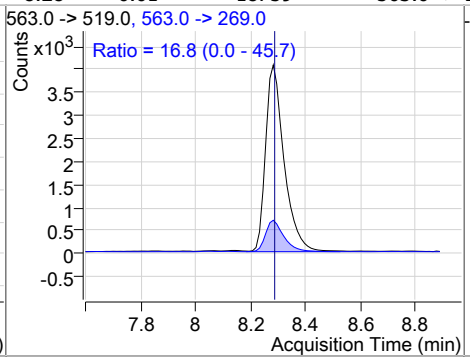


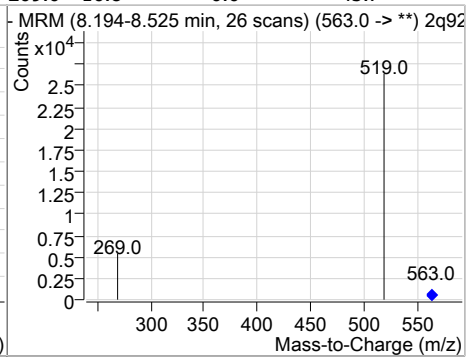


Perfluorinated Compounds by LC/MS/MS

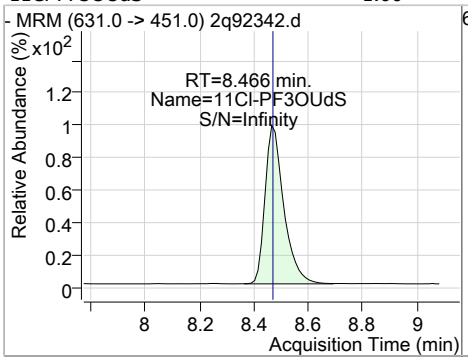
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.93	8.28	0.01	18759	563.0 -> 269.0	16.8	0.0	45.7

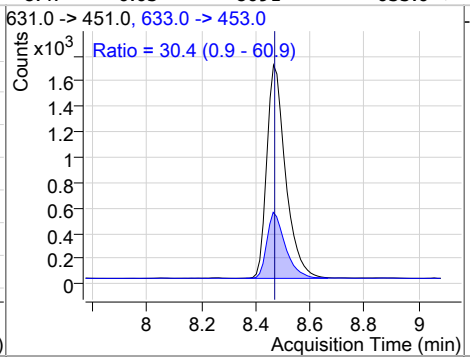


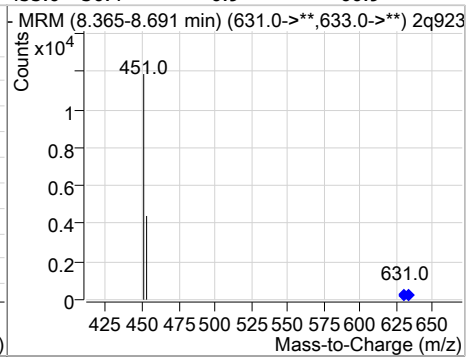




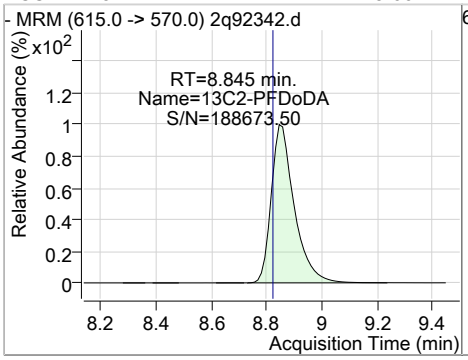
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.00	8.47	0.03	8091	633.0 -> 453.0	30.4	0.9	60.9

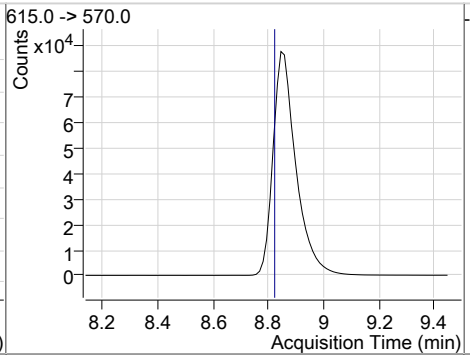


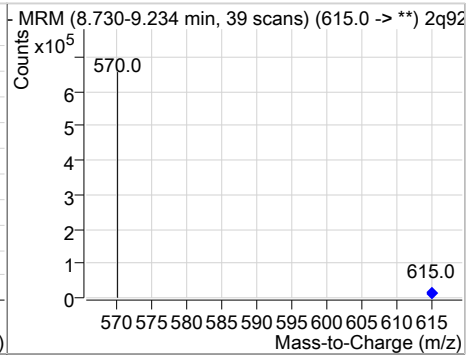




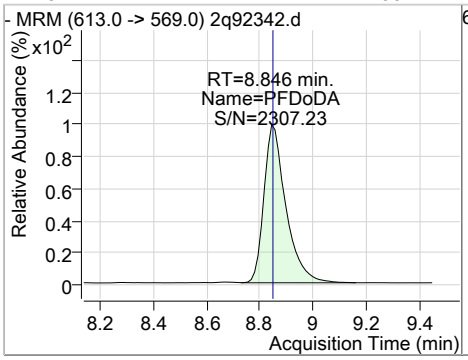
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.66	8.84	0.03	504138				

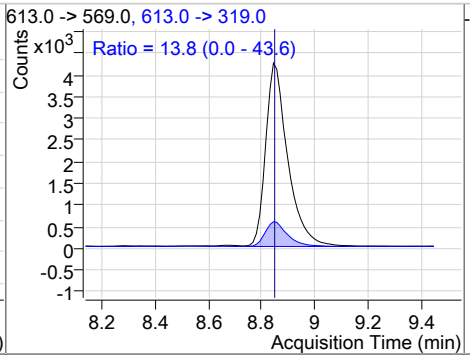


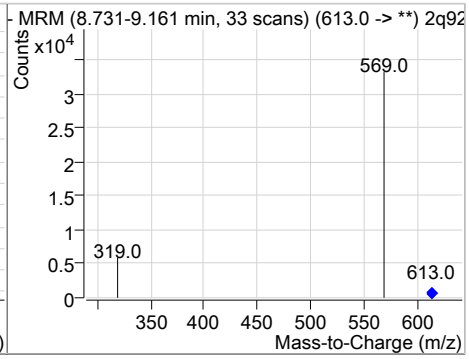




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.00	8.85	0.03	24194	613.0 -> 319.0	13.8	0.0	43.6

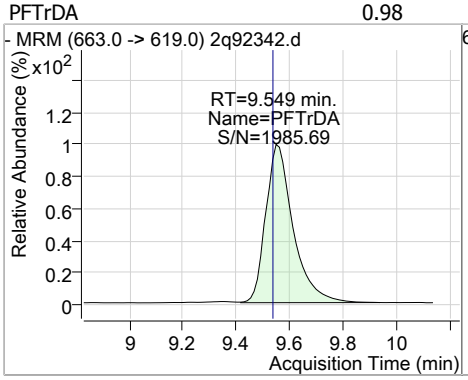


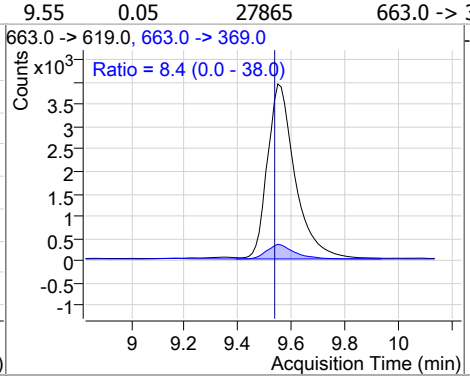


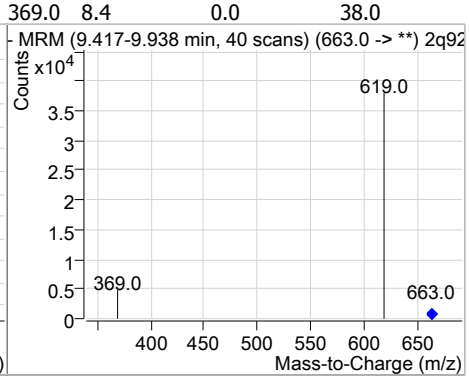


Perfluorinated Compounds by LC/MS/MS

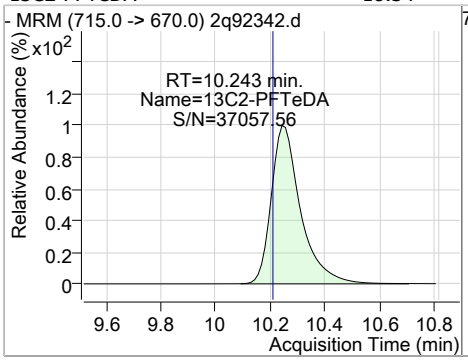
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.98	9.55	0.05	27865	663.0 -> 369.0	8.4	0.0	38.0

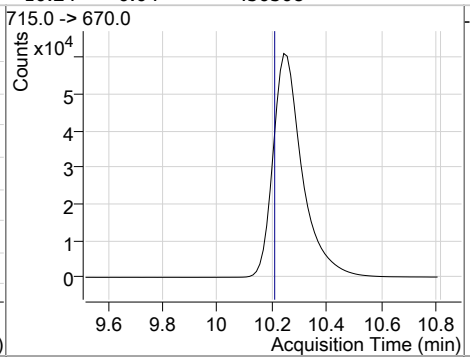


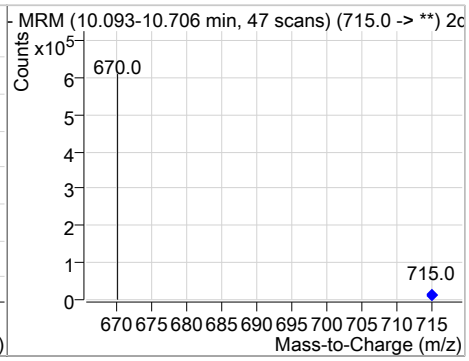




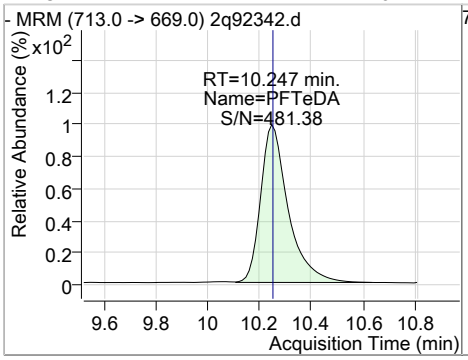
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.34	10.24	0.04	456508				

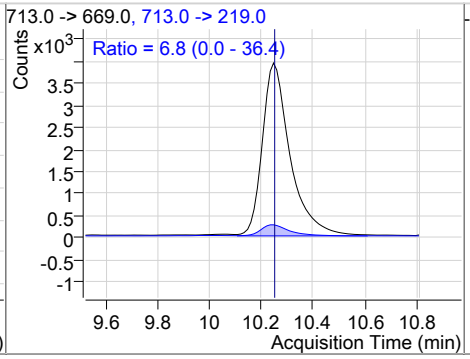


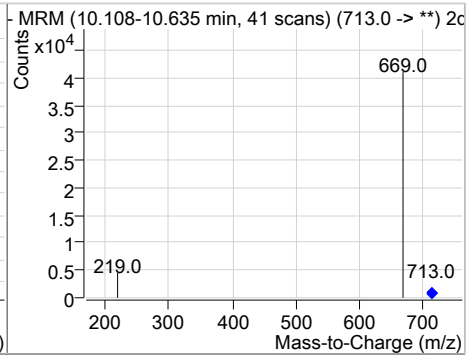




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.04	10.25	0.04	28809	713.0 -> 219.0	6.8	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1294-CC1287
Lab FileID: 2Q92342.D
Injection Time: 06/03/22 11:45
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 10:57 James Boone
Supervisor approved: 06/05/22 18:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92352.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 2:53:15 PM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

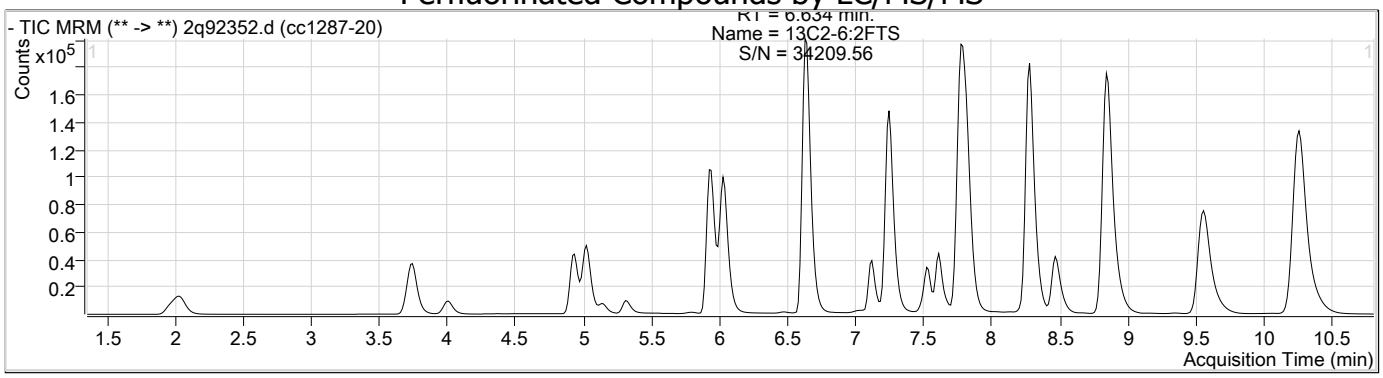
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	61534	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	73047	20.00	µg/L	0.013
M5-PFPeA	3.749	268.0 -> 223.0	84053	20.00	µg/L	0.013
M5-PFHxA	5.027	318.0 -> 273.0	124372	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	176740	20.00	µg/L	0.000
M8-PFOA	6.649	421.0 -> 376.0	242560	20.00	µg/L	0.000
M9-PFNA	7.252	472.0 -> 427.0	277721	20.00	µg/L	0.000
M6-PFDA	7.779	519.0 -> 474.0	350223	20.00	µg/L	0.000
M7-PFUnDA	8.282	570.0 -> 525.0	443172	20.00	µg/L	0.013
M2-PFDoDA	8.845	615.0 -> 570.0	526826	20.00	µg/L	0.027
M2-PFTeDA	10.255	715.0 -> 670.0	464407	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	70504	20.00	µg/L	-0.025
M3-PFBS	4.004	302.0 -> 99.0	9552	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	13796	20.00	µg/L	0.000
M8-PFOS	7.225	507.0 -> 99.0	19853	20.00	µg/L	0.000
M2-4:2FTS	4.934	329.0 -> 81.0	8751	20.00	µg/L	0.000
M2-6:2FTS	6.634	429.0 -> 81.0	19005	20.00	µg/L	0.000
M2-8:2FTS	7.828	529.0 -> 81.0	27068	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	76495	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	4955	20.00	µg/L	0.000
M3-MeFOSA	7.527	515.0 -> 169.0	24316	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8751	18.81	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.1%		
13C2-6:2FTS	6.634	429.0 -> 81.0	19005	18.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%		
13C2-8:2FTS	7.828	529.0 -> 81.0	27068	18.28	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%		
13C2-PFDoDA	8.845	615.0 -> 570.0	526826	19.50	µg/L	0.027
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%		
13C2-PFTeDA	10.255	715.0 -> 670.0	464407	18.66	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C3-PFBS	4.004	302.0 -> 99.0	9552	18.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.9%		
13C3-PFHxS	5.967	402.0 -> 99.0	13796	19.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C4-PFBA	2.027	217.0 -> 172.0	73047	18.91	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
13C4-PFHpA	5.929	367.0 -> 322.0	176740	19.04	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
d5-EtFOSAA	7.748	589.0 -> 419.0	61534	20.27	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C5-PFHxA	5.027	318.0 -> 273.0	124372	18.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.1%		
13C5-PFPeA	3.749	268.0 -> 223.0	84053	18.44	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

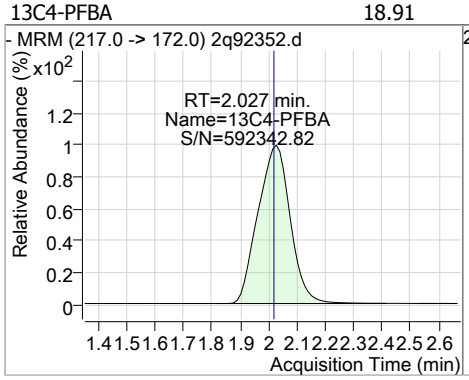
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%			
13C6-PFDA	7.779	519.0 -> 474.0	350223	19.23	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%			
13C7-PFUnDA	8.282	570.0 -> 525.0	443172	19.58	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%			
13C8-FOSA	7.124	506.0 -> 78.0	70504	19.16	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%			
13C8-PFOA	6.649	421.0 -> 376.0	242560	18.84	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.2%			
13C8-PFOS	7.225	507.0 -> 99.0	19853	19.13	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%			
13C9-PFNA	7.252	472.0 -> 427.0	277721	19.04	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
d3-MeFOSAA	7.610	573.0 -> 419.0	76495	19.95	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%			
13C3-HFPO-DA	5.319	287.0 -> 169.0	4955	19.03	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%			
d3-MeFOSA	7.527	515.0 -> 169.0	24316	17.37	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	78766	17.18	µg/L		99
6:2FTS	6.635	427.0 -> 407.0	126433	18.04	µg/L		100
8:2FTS	7.829	527.0 -> 507.0	118246	18.34	µg/L		98
EtFOSAA	7.748	584.0 -> 419.0	52995	17.29	µg/L	m	98
FOSA	7.125	498.0 -> 78.0	65251	17.62	µg/L		100
MeFOSAA	7.611	570.0 -> 419.0	61704	17.56	µg/L	m	98
PFBA	2.021	213.0 -> 169.0	31608	16.87	µg/L		100
PFBS	4.007	299.0 -> 80.0	27724	17.41	µg/L		99
PFDA	7.780	513.0 -> 469.0	305902	17.24	µg/L		99
PFDoDA	8.846	613.0 -> 569.0	429796	17.01	µg/L		100
PFDS	8.228	599.0 -> 80.0	13990	17.31	µg/L		100
PFHpA	5.930	363.0 -> 319.0	251107	17.38	µg/L		99
PFHpS	6.645	449.0 -> 80.0	28916	17.83	µg/L		100
PFHxA	5.028	313.0 -> 269.0	78670	17.10	µg/L		99
PFHxS	5.967	399.0 -> 80.0	30213	17.45	µg/L	m	97
PFNA	7.252	463.0 -> 419.0	269873	17.48	µg/L		99
PFNS	7.751	549.0 -> 80.0	24093	17.23	µg/L		98
PFOA	6.649	413.0 -> 369.0	231430	17.57	µg/L		99
PFOS	7.225	499.0 -> 80.0	29728	17.11	µg/L	m	99
PFPeA	3.751	263.0 -> 219.0	116002	17.92	µg/L		100
PFPeS	5.145	349.0 -> 80.0	19365	17.78	µg/L		99
PFTeDA	10.260	713.0 -> 669.0	507716	17.96	µg/L		100
PFTrDA	9.562	663.0 -> 619.0	502509	16.98	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	340018	16.75	µg/L		98
11Cl-PF3OUdS	8.466	631.0 -> 451.0	148037	17.43	µg/L		100
9Cl-PF3ONS	7.499	531.0 -> 351.0	30795	16.23	µg/L		100
ADONA	6.032	377.0 -> 251.0	310509	17.03	µg/L		100
HFPO-DA	5.314	329.0 -> 169.0	33087	18.52	µg/L		97
MeFOSA	7.541	512.0 -> 219.0	18759	18.29	µg/L		99

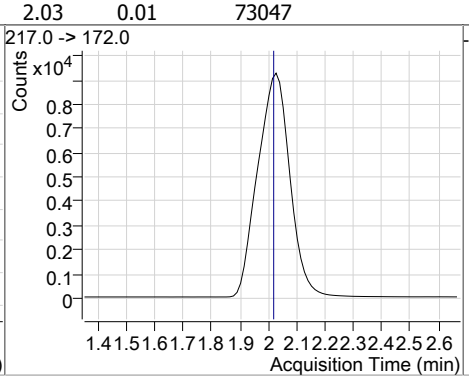
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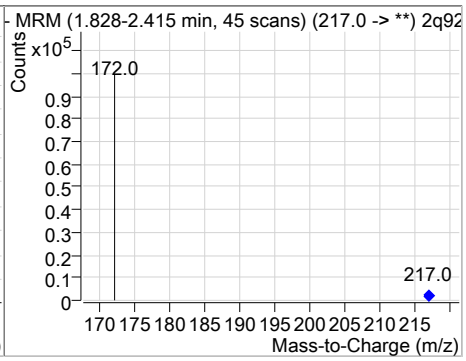
Perfluorinated Compounds by LC/MS/MS



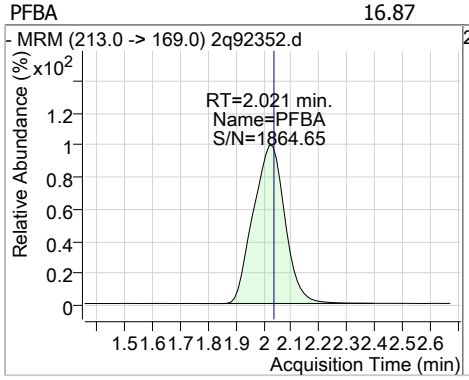
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.91	2.03	0.01	73047				

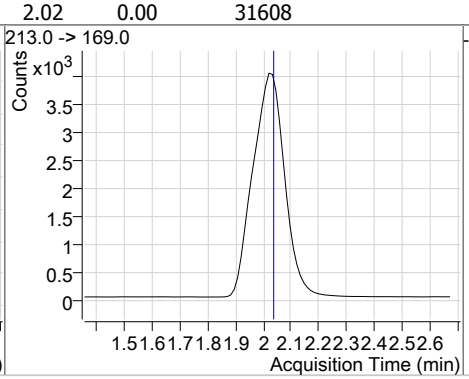


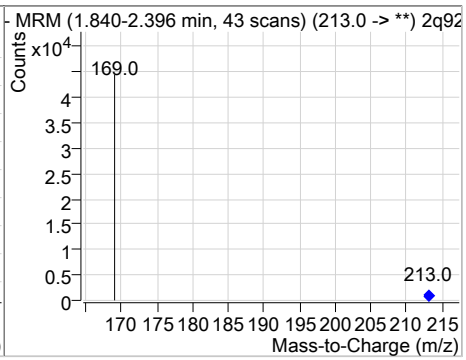




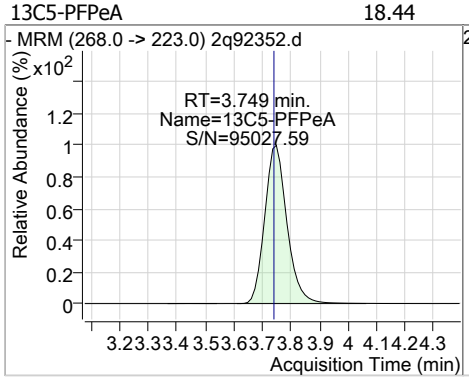
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	16.87	2.02	0.00	31608				

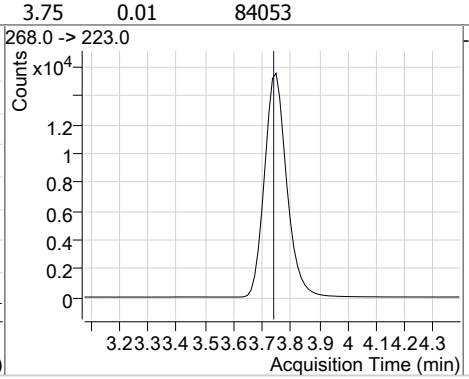


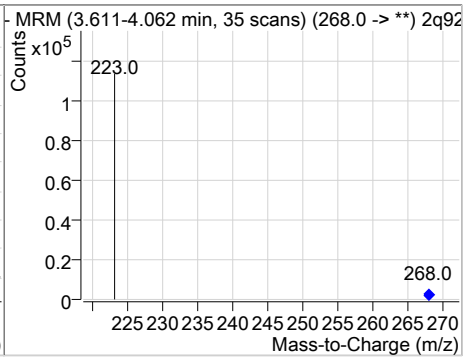




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.44	3.75	0.01	84053				

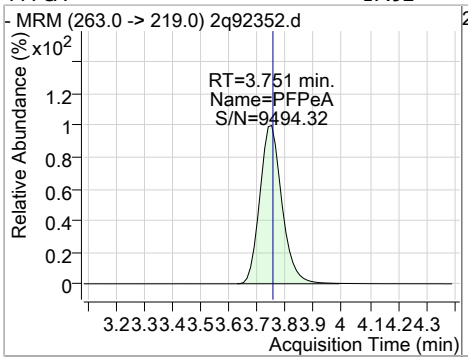


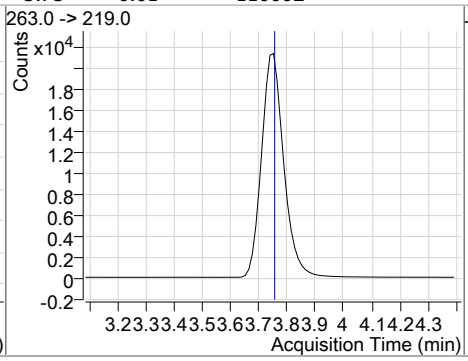


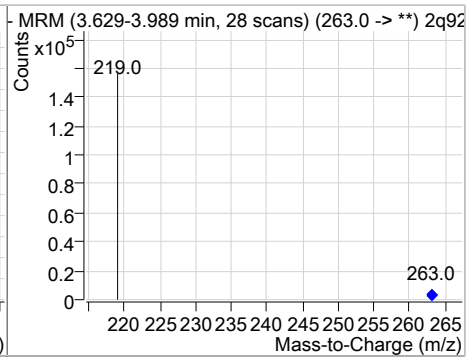


Perfluorinated Compounds by LC/MS/MS

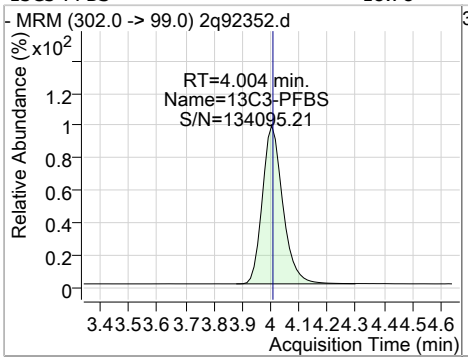
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.92	3.75	0.01	116002				

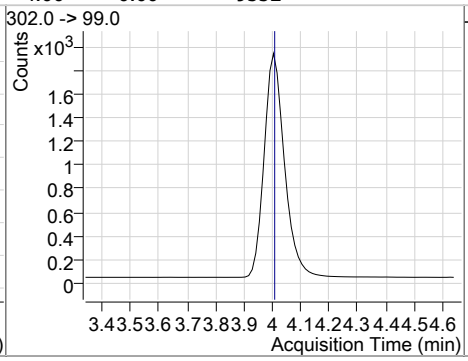


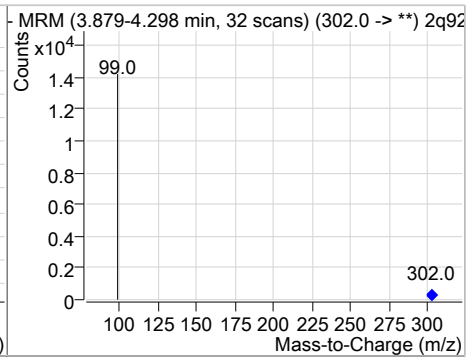




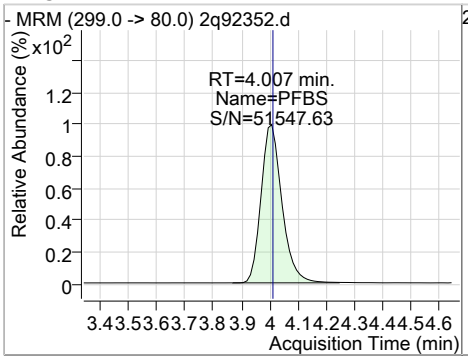
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.78	4.00	0.00	9552				

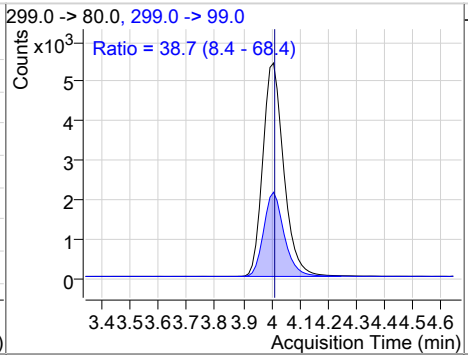


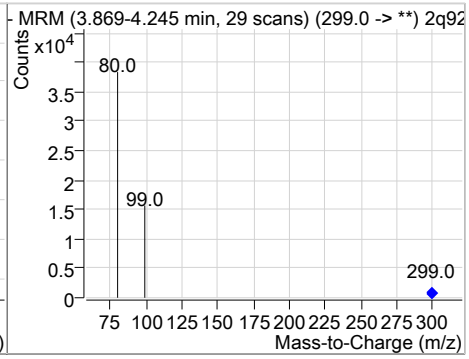




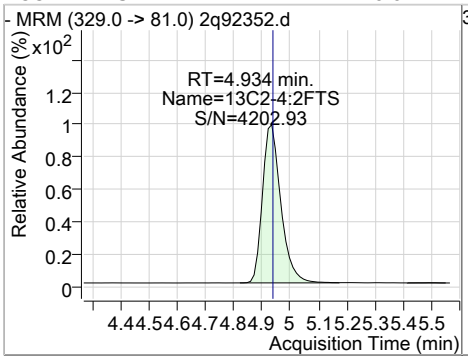
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.41	4.01	0.00	27724	299.0 -> 99.0	38.7	8.4	68.4

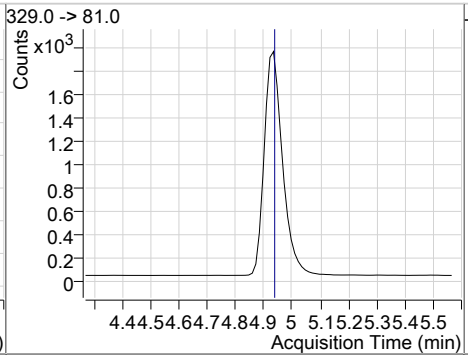


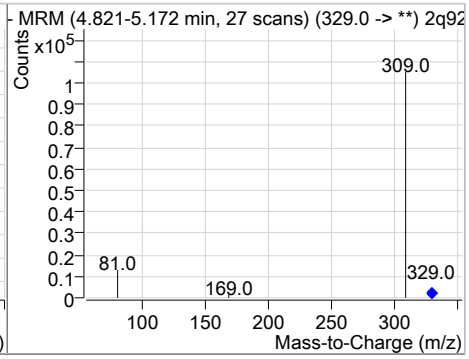




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.81	4.93	0.00	8751				

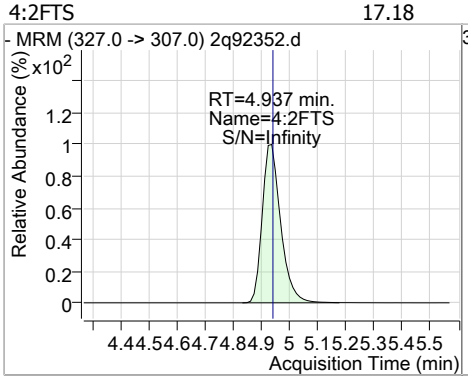


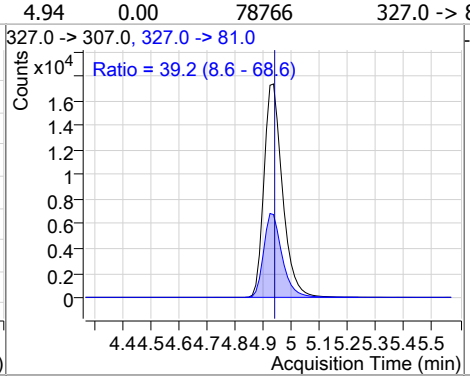


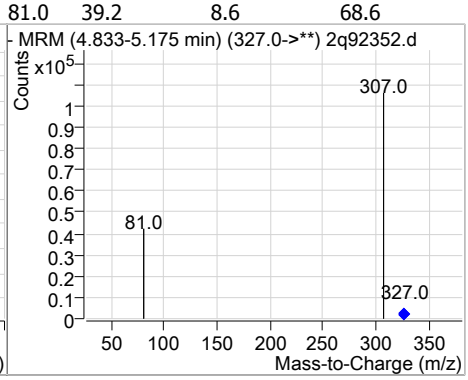


Perfluorinated Compounds by LC/MS/MS

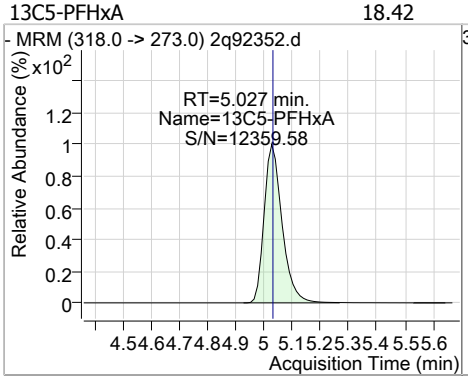
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	17.18	4.94	0.00	78766	327.0 -> 81.0	39.2	8.6	68.6

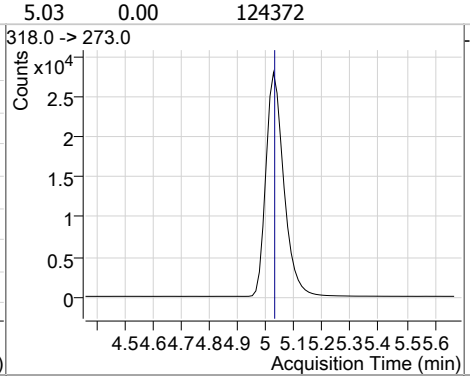


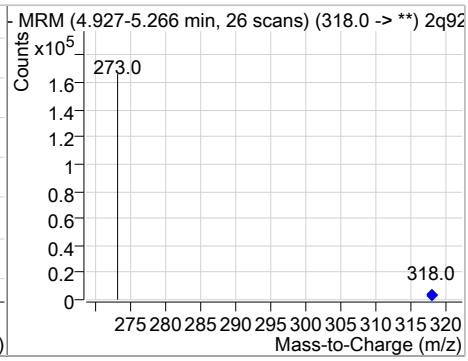




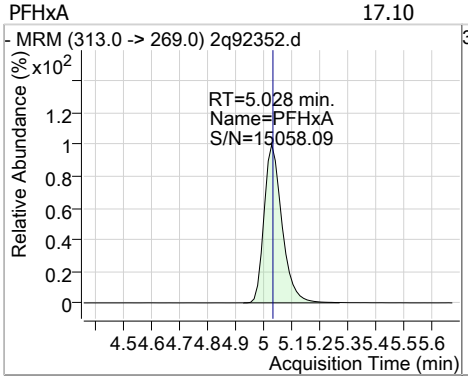
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.42	5.03	0.00	124372				

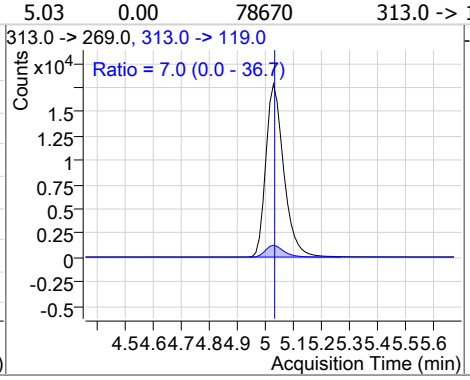


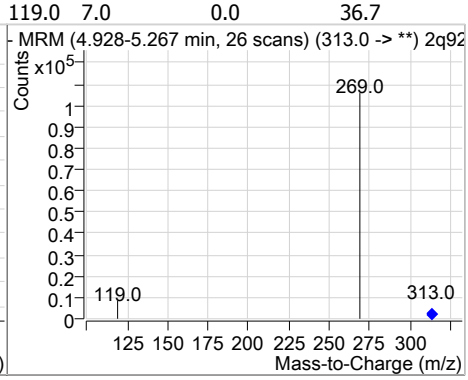




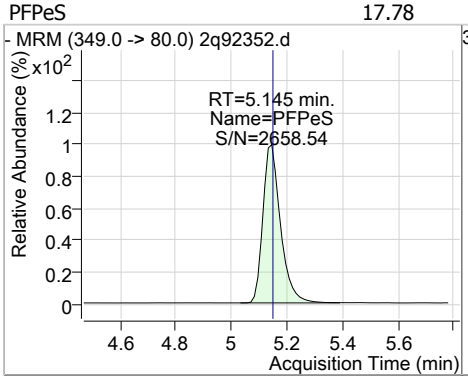
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.10	5.03	0.00	78670	313.0 -> 119.0	7.0	0.0	36.7

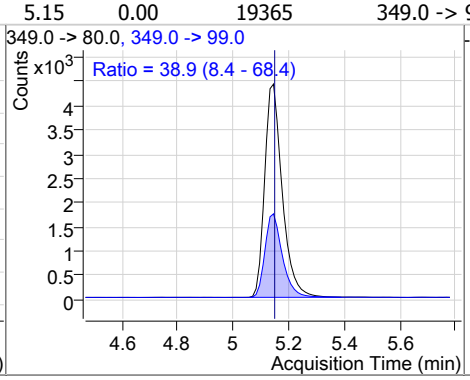


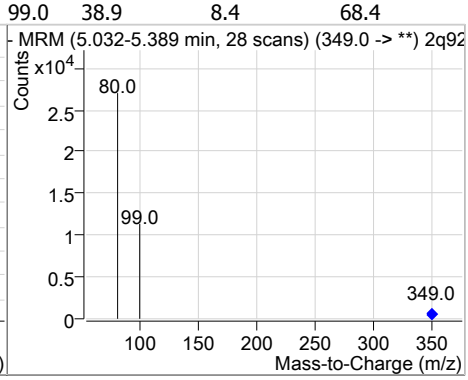




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.78	5.15	0.00	19365	349.0 -> 99.0	38.9	8.4	68.4

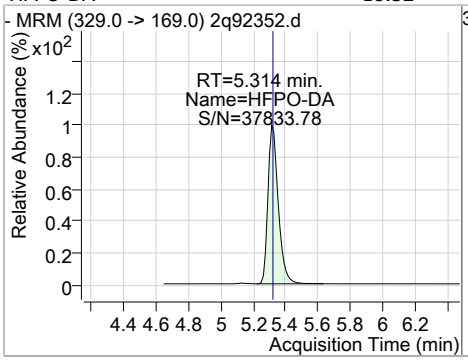


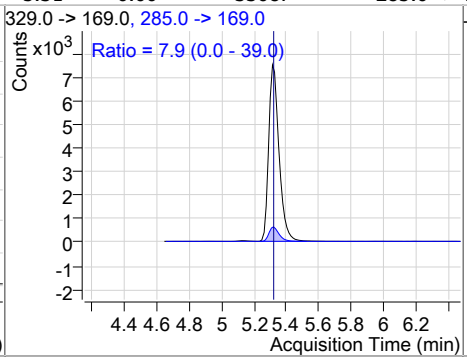


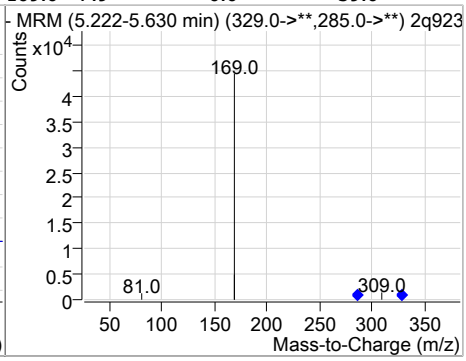


Perfluorinated Compounds by LC/MS/MS

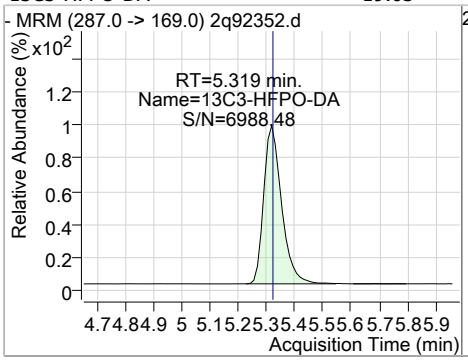
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.52	5.31	0.00	33087	285.0 -> 169.0	7.9	0.0	39.0

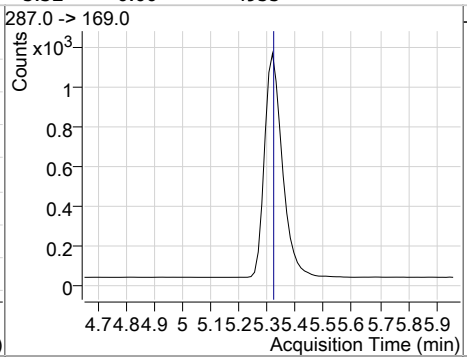


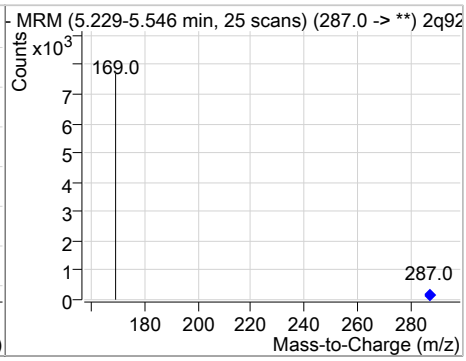




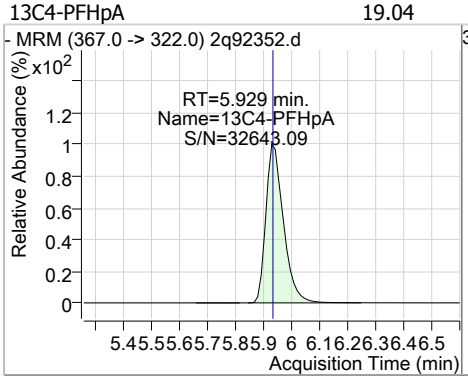
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.03	5.32	0.00	4955				

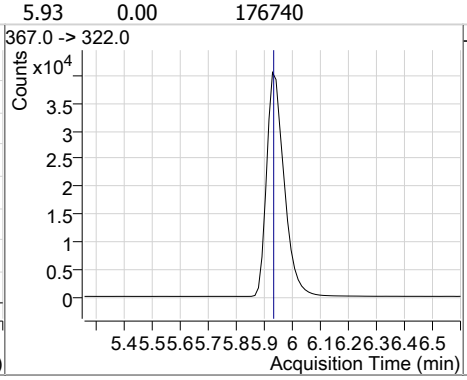


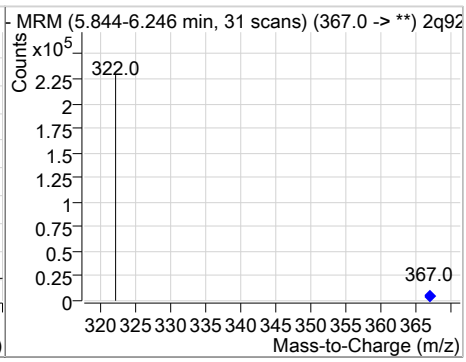




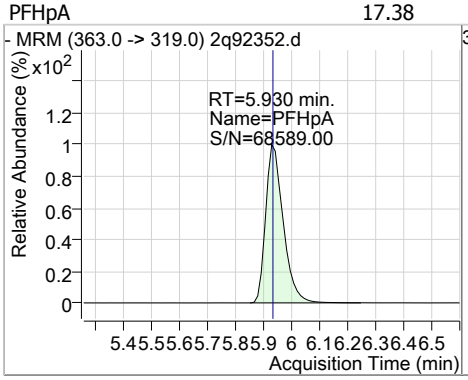
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.04	5.93	0.00	176740				

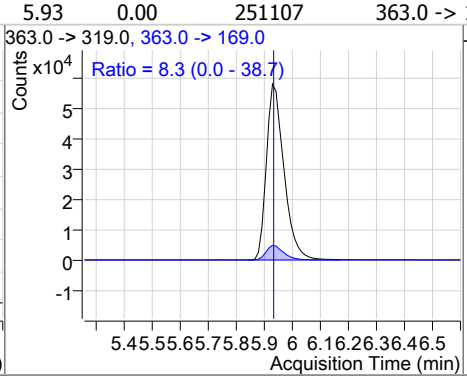


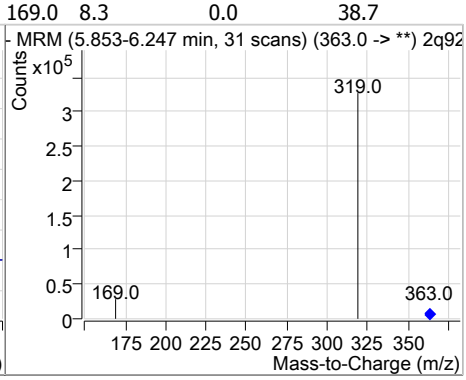




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.38	5.93	0.00	251107	363.0 -> 169.0	8.3	0.0	38.7

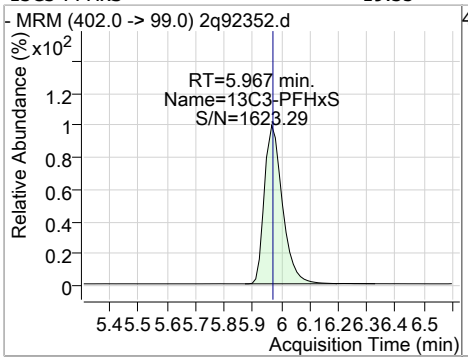


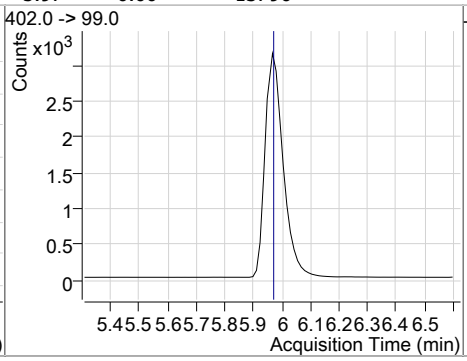


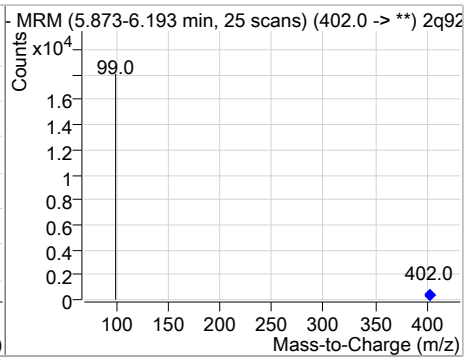


Perfluorinated Compounds by LC/MS/MS

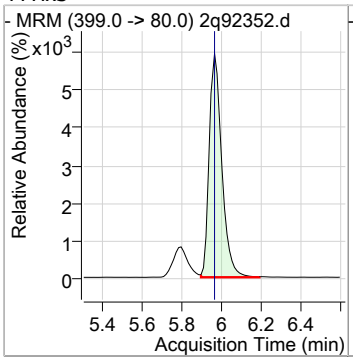
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.35	5.97	0.00	13796				

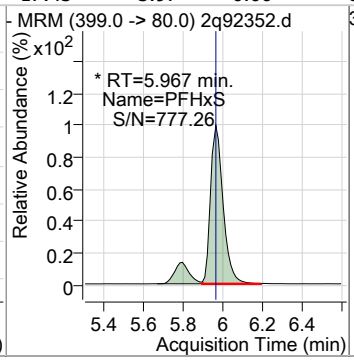


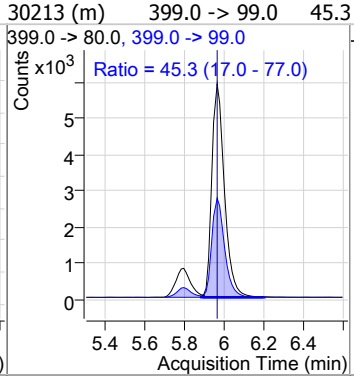


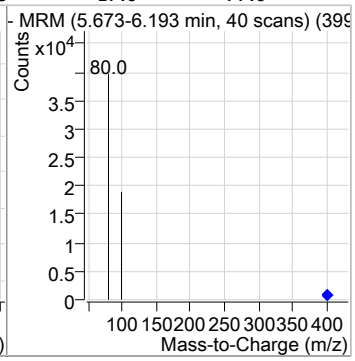


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.45	5.97	0.00	30213 (m)	399.0 -> 99.0	45.3	17.0	77.0

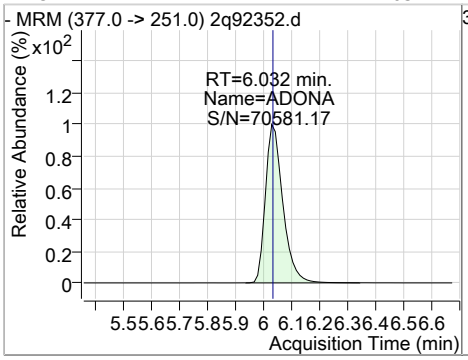


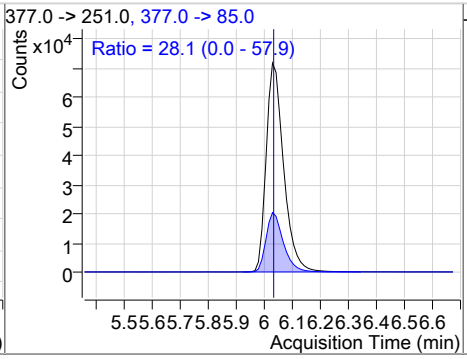


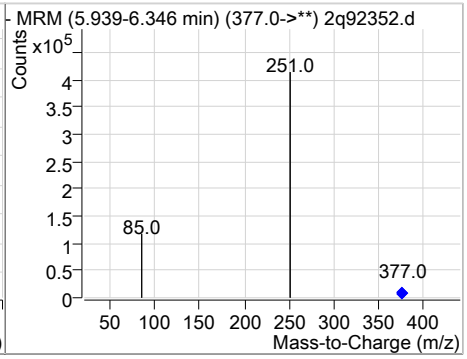




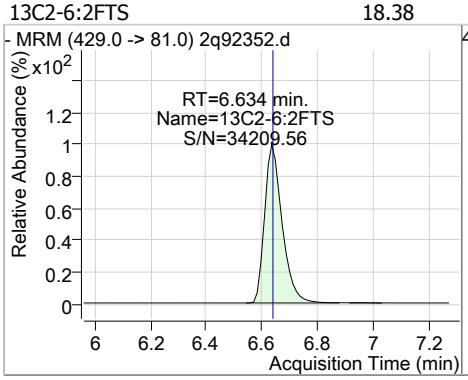
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	17.03	6.03	0.00	310509	377.0 -> 85.0	28.1	0.0	57.9

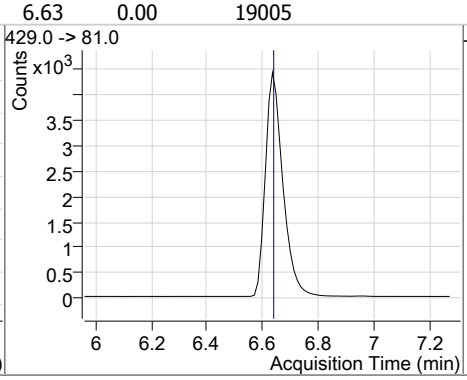


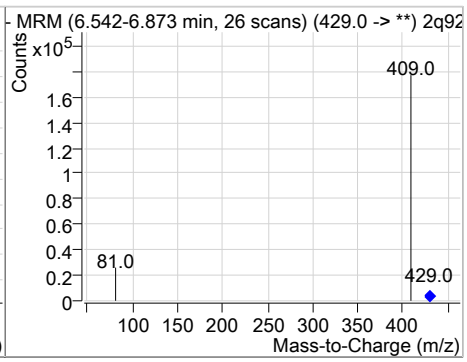




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.38	6.63	0.00	19005				

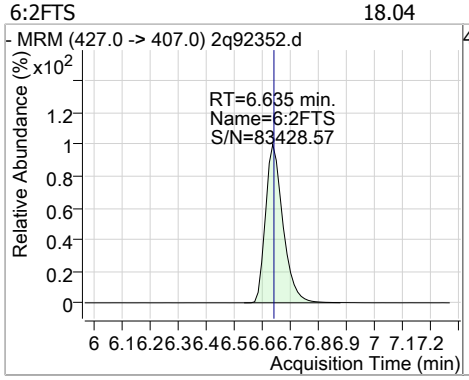


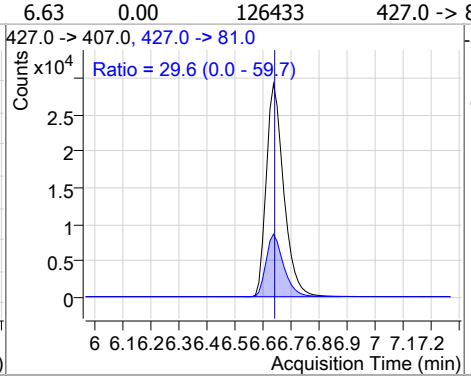


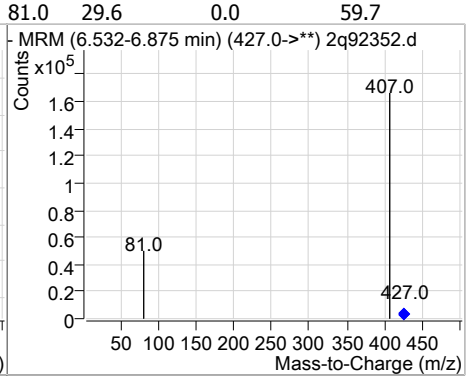


Perfluorinated Compounds by LC/MS/MS

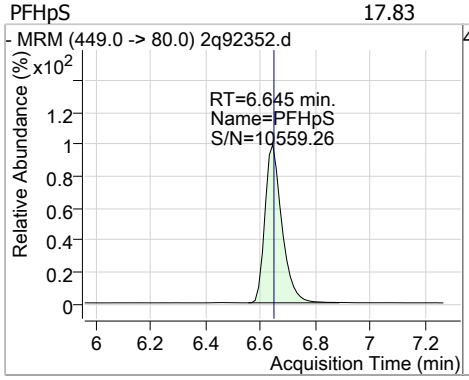
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.04	6.63	0.00	126433	427.0 -> 81.0	29.6	0.0	59.7

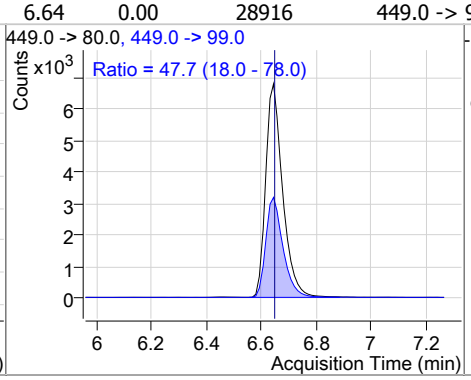


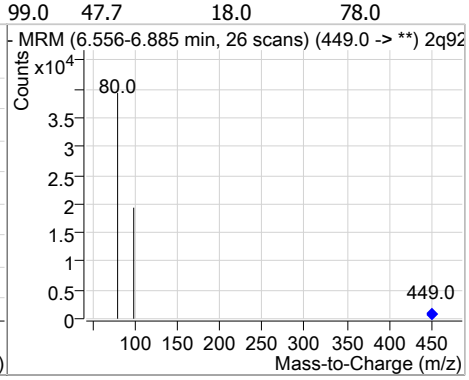




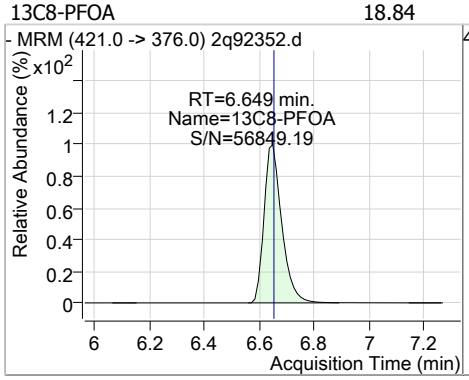
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.83	6.64	0.00	28916	449.0 -> 99.0	47.7	18.0	78.0

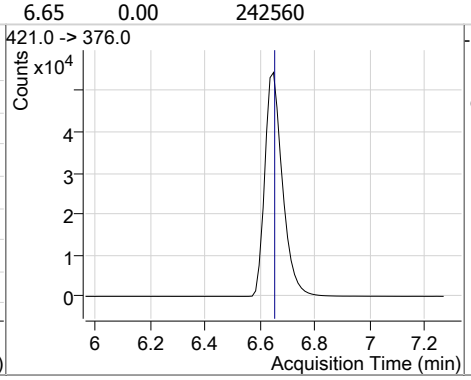


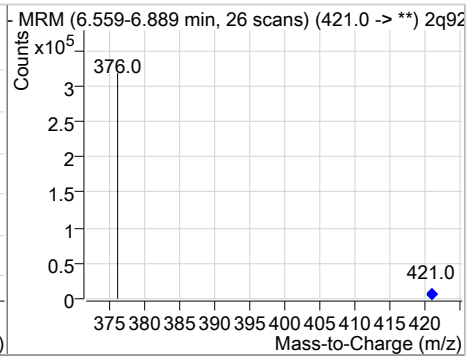




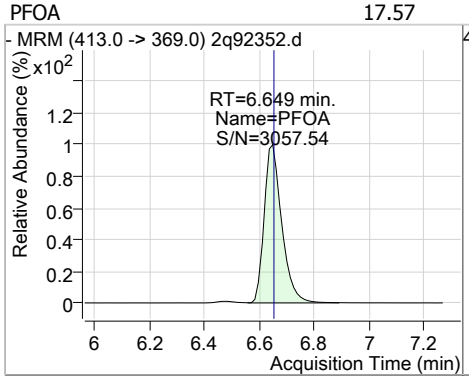
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.84	6.65	0.00	242560				

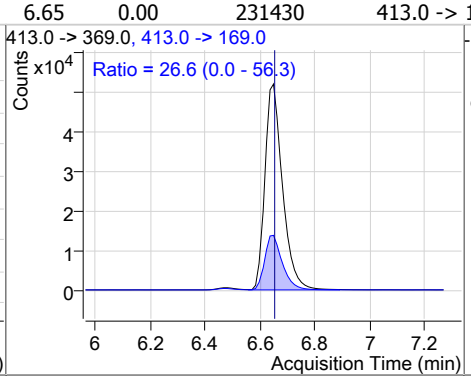


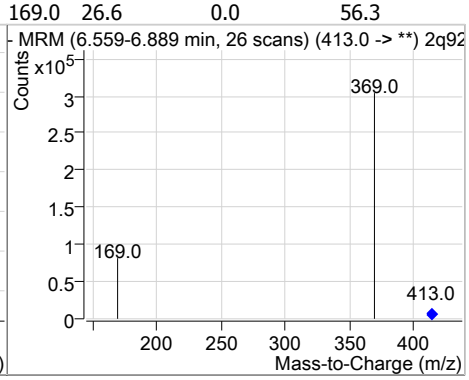




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.57	6.65	0.00	231430	413.0 -> 169.0	26.6	0.0	56.3

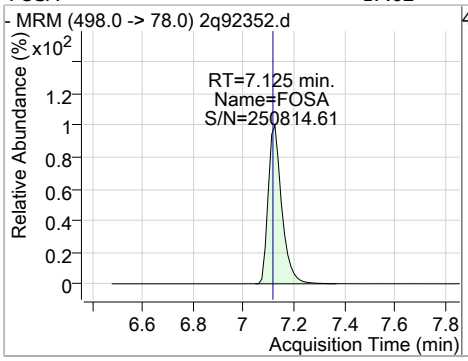


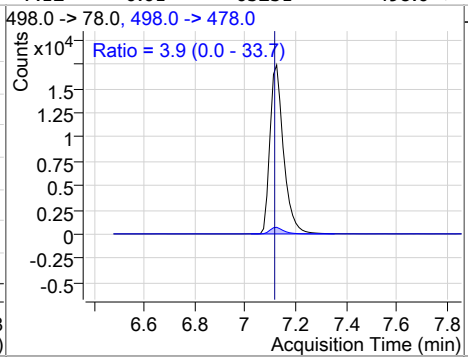


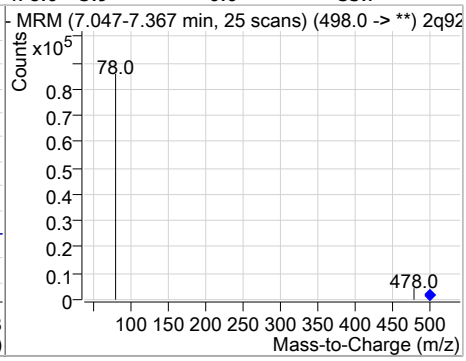


Perfluorinated Compounds by LC/MS/MS

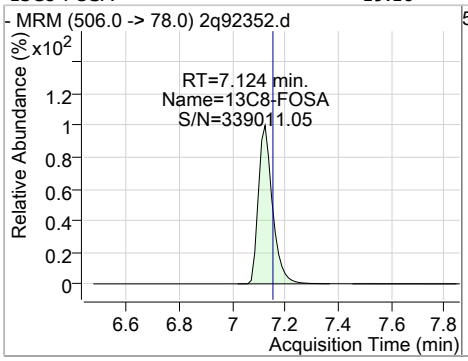
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.62	7.12	-0.01	65251	498.0 -> 478.0	3.9	0.0	33.7

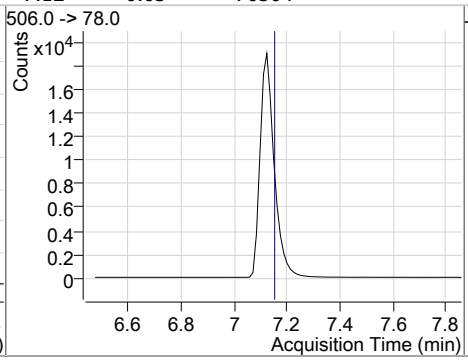


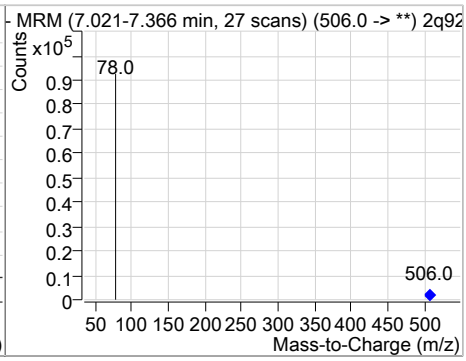




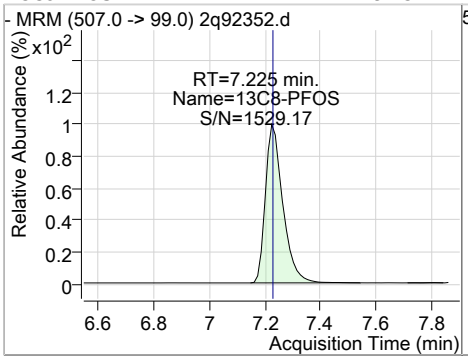
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.16	7.12	-0.03	70504				

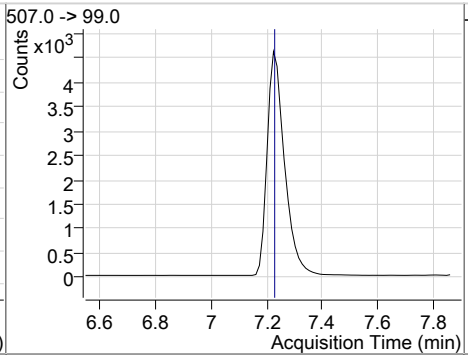


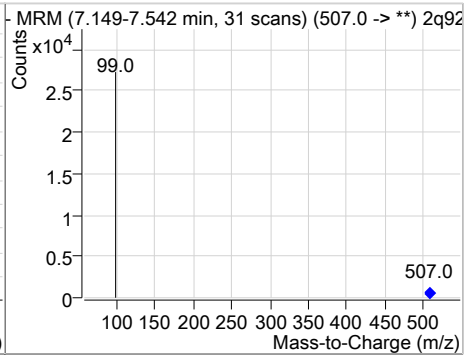




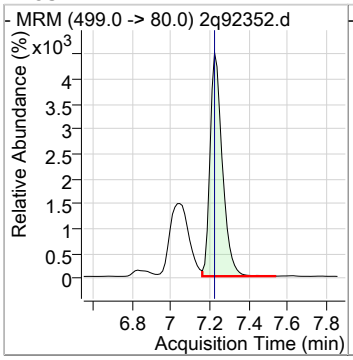
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.13	7.22	0.00	19853				

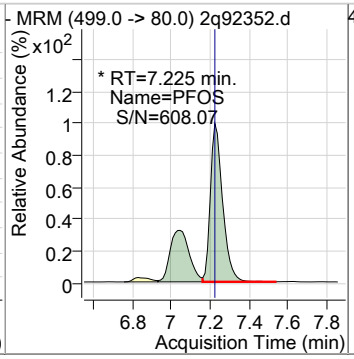


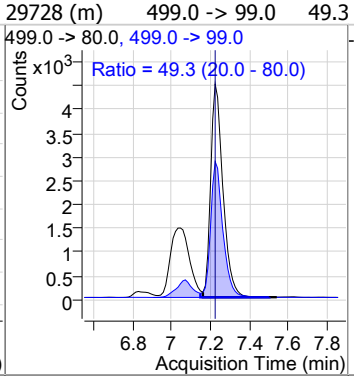


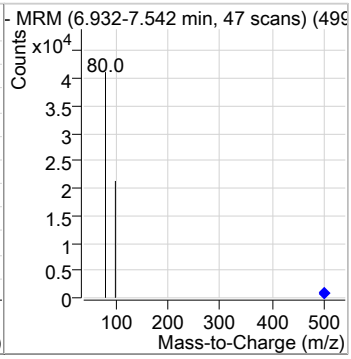


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.11	7.23	0.00	29728 (m)	499.0 -> 99.0	49.3	20.0	80.0



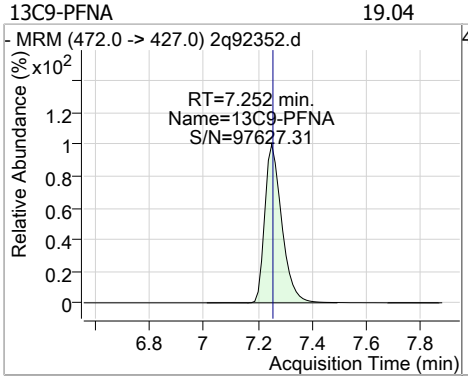


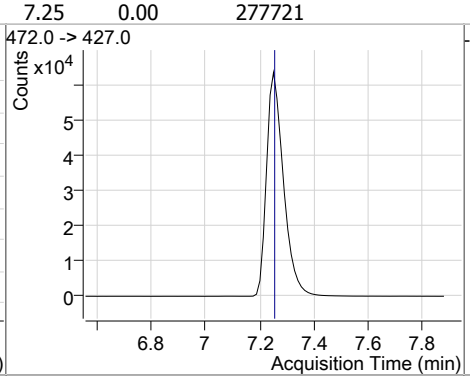


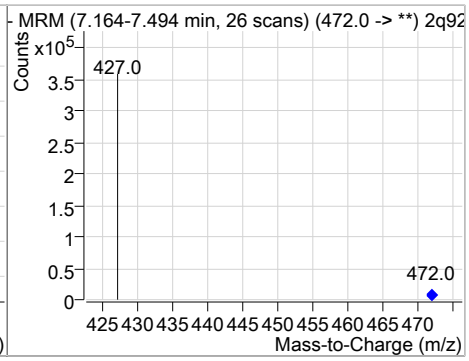


Perfluorinated Compounds by LC/MS/MS

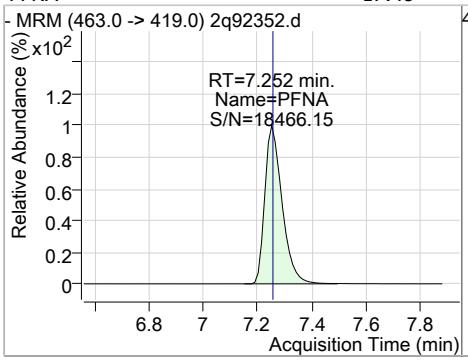
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.04	7.25	0.00	277721				

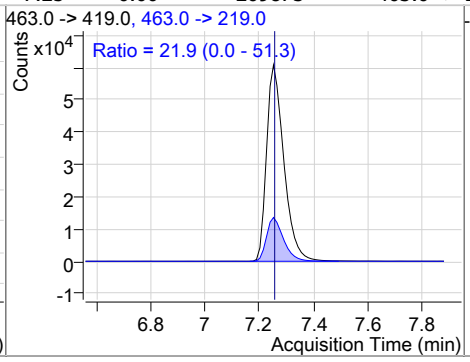


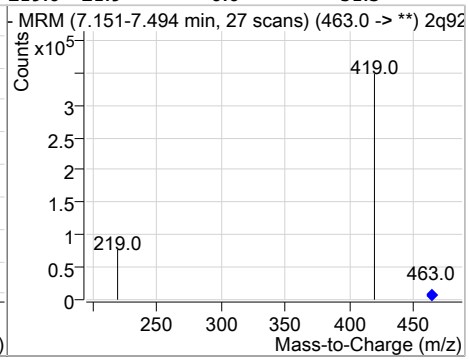




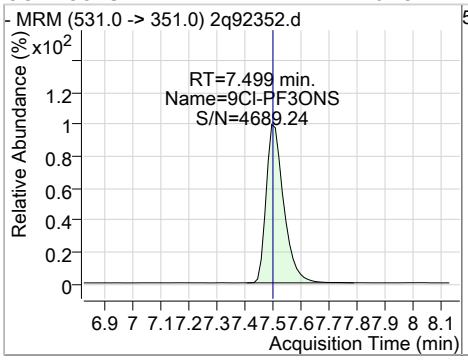
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.48	7.25	0.00	269873	463.0 -> 219.0	21.9	0.0	51.3

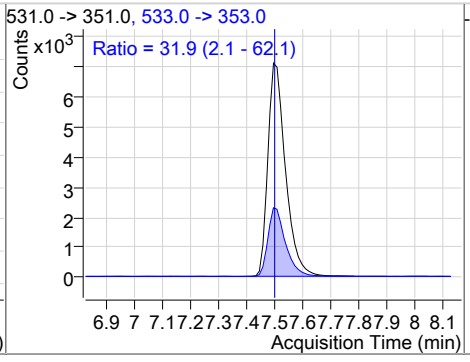


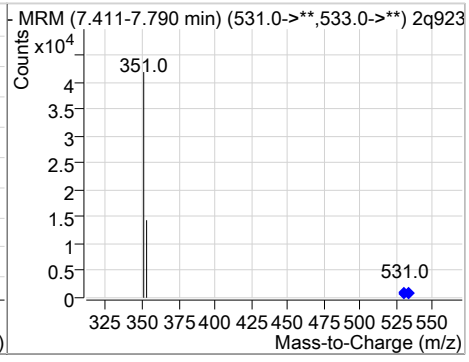




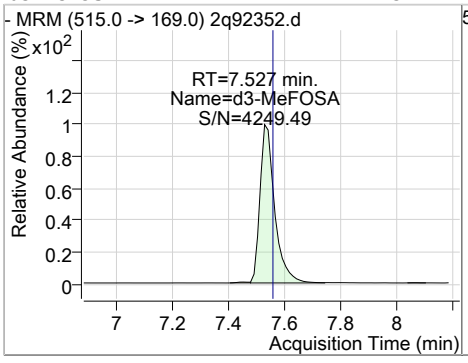
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.23	7.50	0.00	30795	533.0 -> 353.0	31.9	2.1	62.1

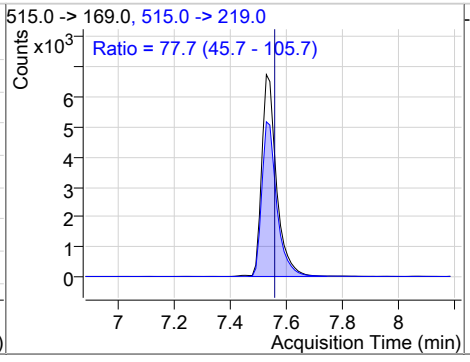


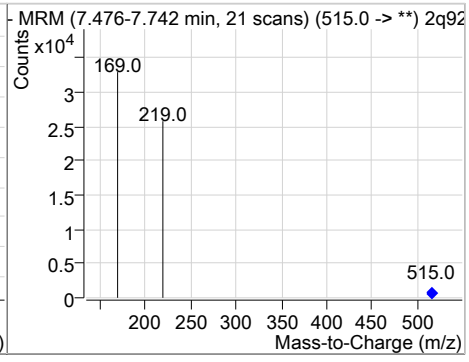




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	17.37	7.53	-0.03	24316	515.0 -> 219.0	77.7	45.7	105.7

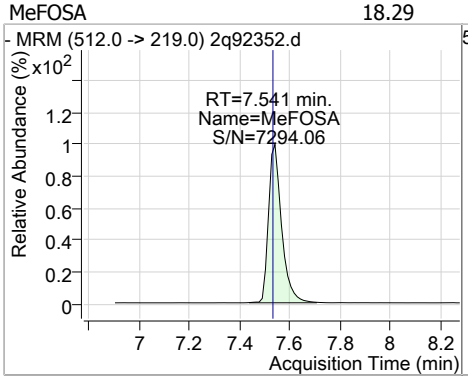


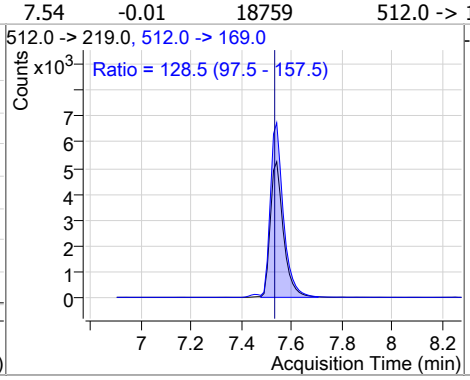


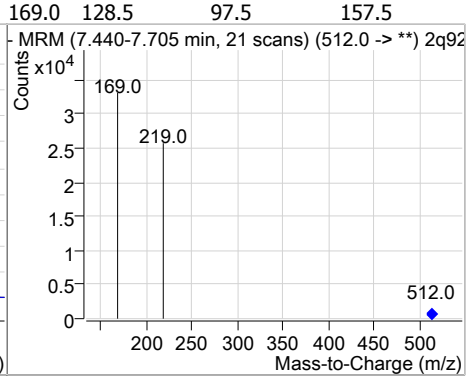


Perfluorinated Compounds by LC/MS/MS

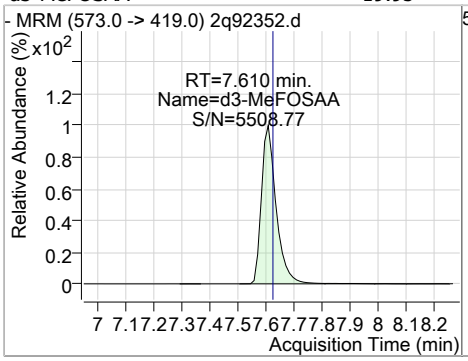
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.29	7.54	-0.01	18759	512.0 -> 169.0	128.5	97.5	157.5

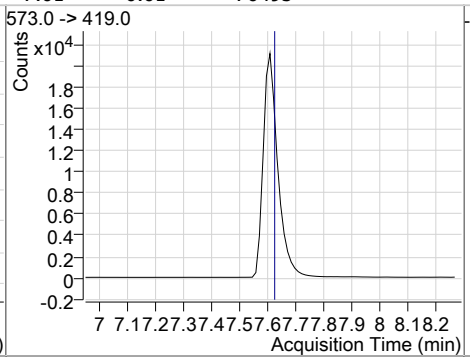


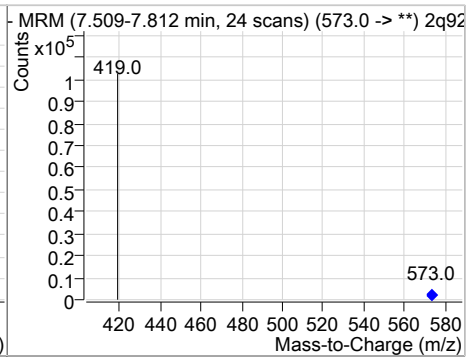




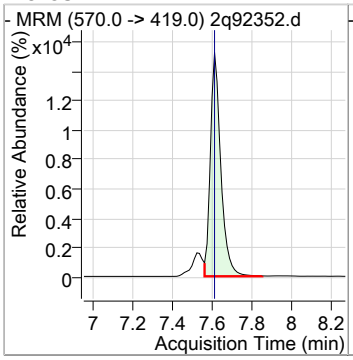
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.95	7.61	-0.01	76495				

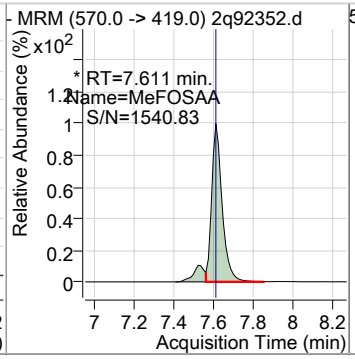


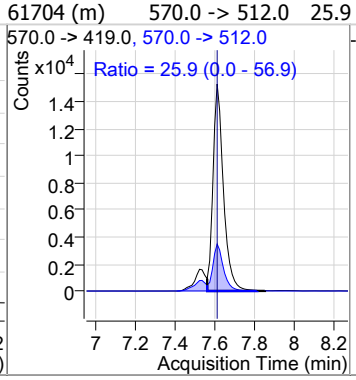


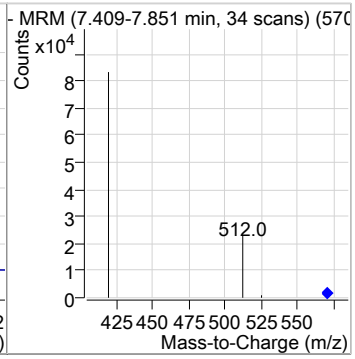


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.56	7.61	-0.01	61704 (m)	570.0 -> 512.0	25.9	0.0	56.9

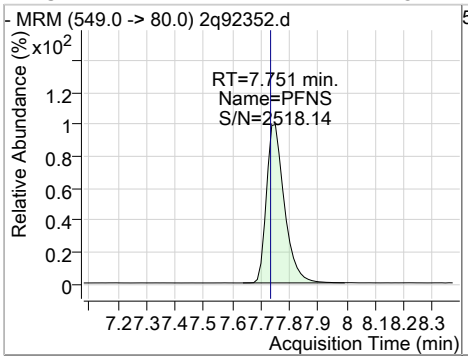


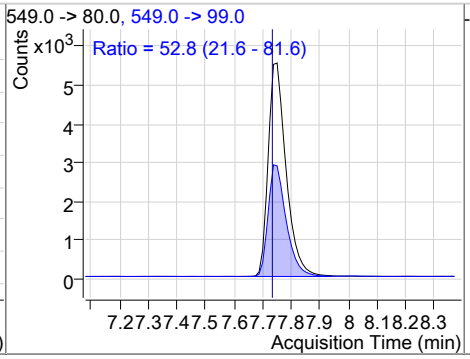


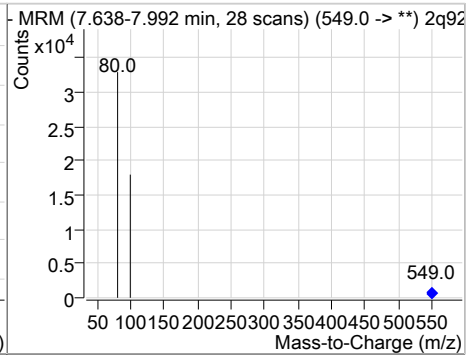




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.23	7.75	0.01	24093	549.0 -> 99.0	52.8	21.6	81.6

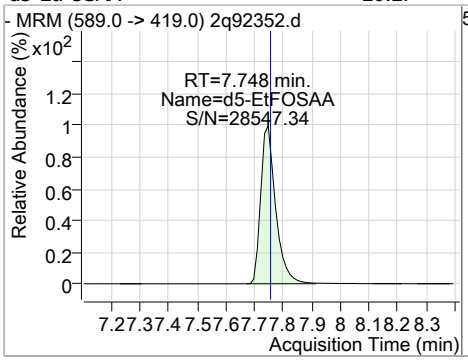


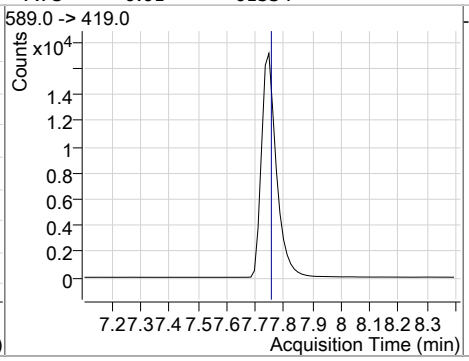


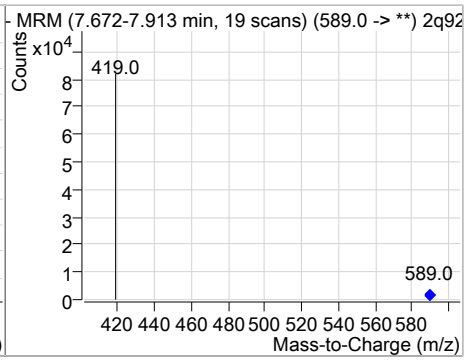


Perfluorinated Compounds by LC/MS/MS

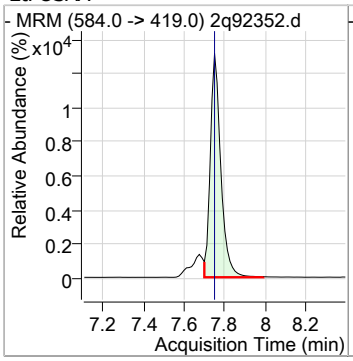
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	20.27	7.75	-0.01	61534				

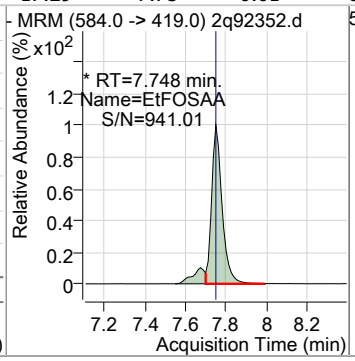


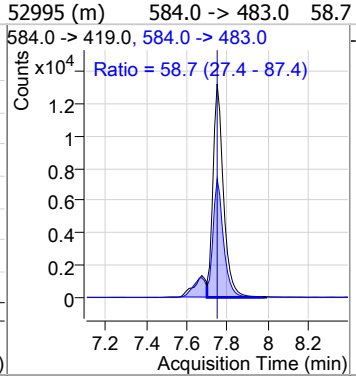


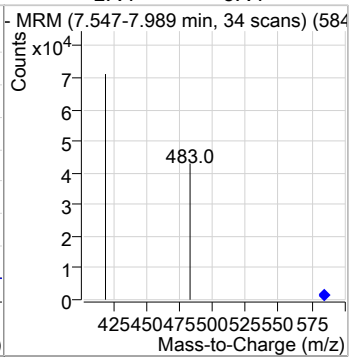


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.29	7.75	-0.01	52995 (m)	584.0 -> 483.0	58.7	27.4	87.4

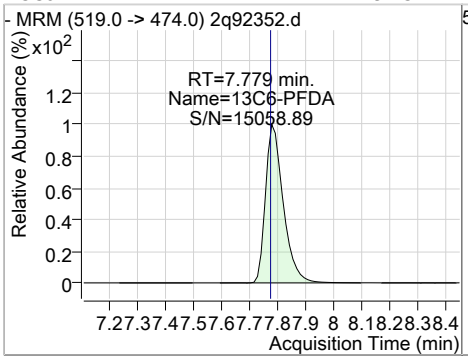


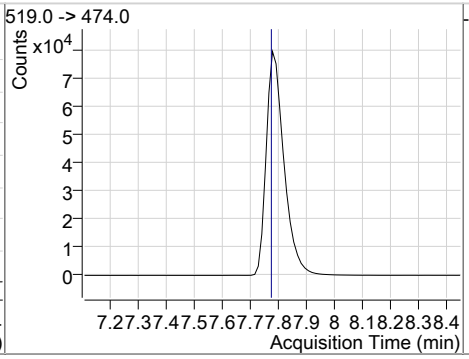


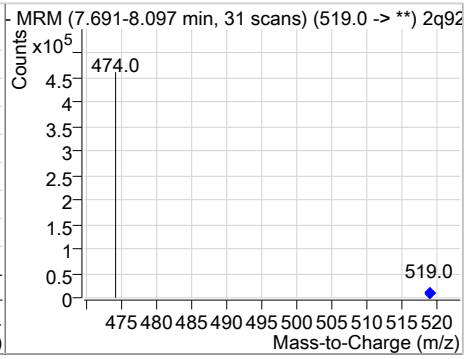




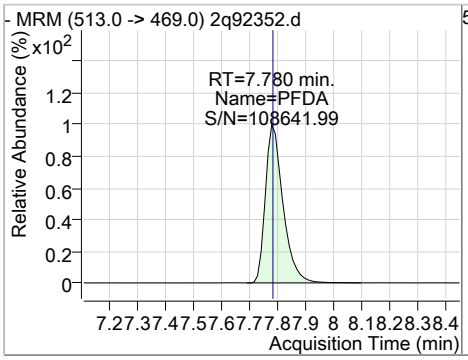
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.23	7.78	0.00	350223				

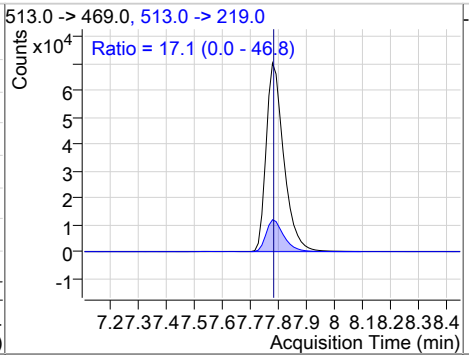


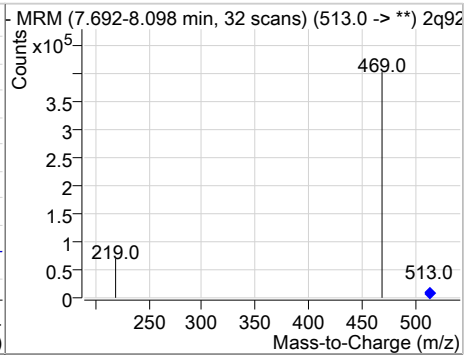




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.24	7.78	0.00	305902	513.0 -> 219.0	17.1	0.0	46.8

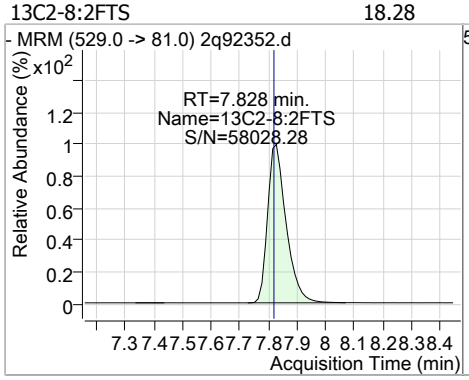


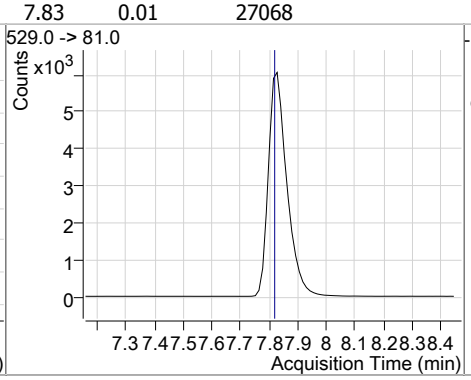


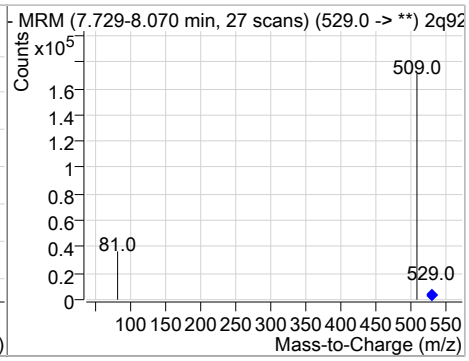


Perfluorinated Compounds by LC/MS/MS

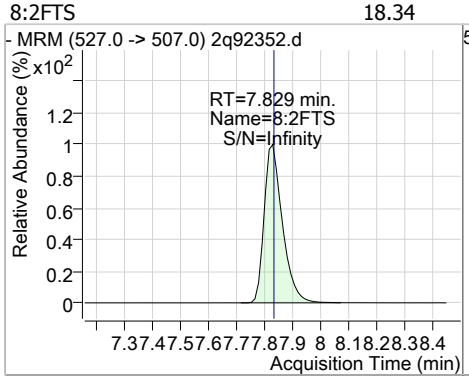
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.28	7.83	0.01	27068				

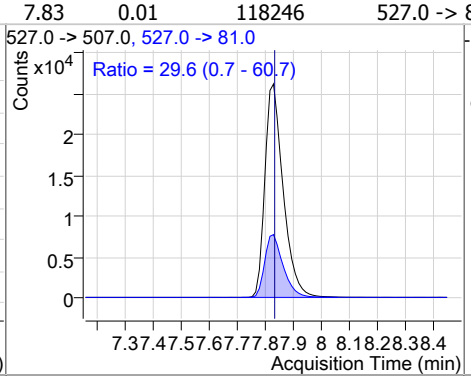


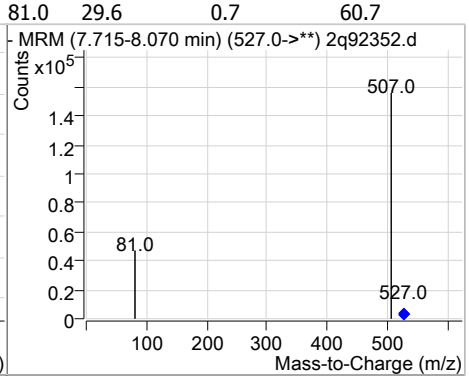




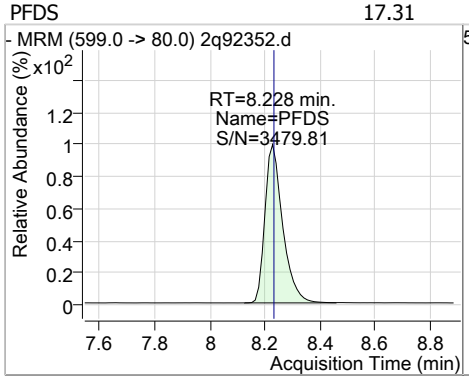
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.34	7.83	0.01	118246	527.0 -> 81.0	29.6	0.7	60.7

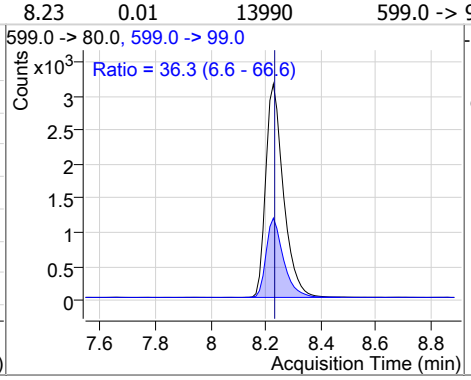


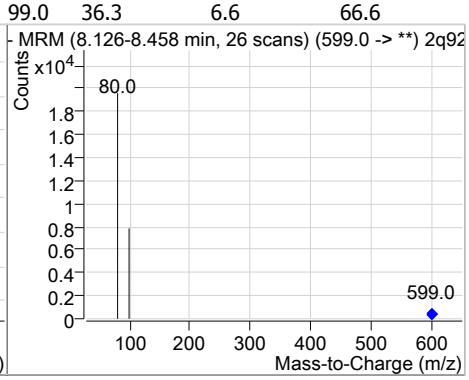




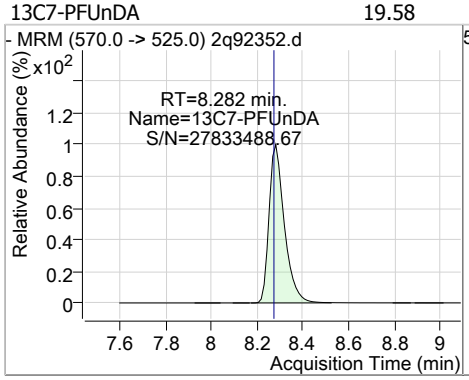
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.31	8.23	0.01	13990	599.0 -> 99.0	36.3	6.6	66.6

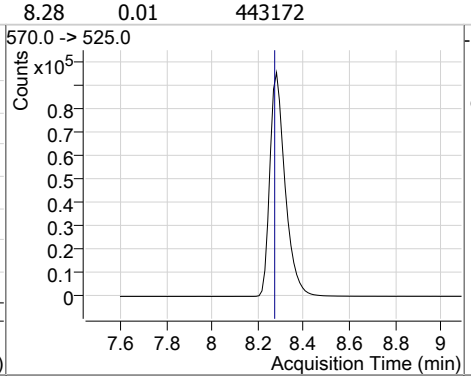


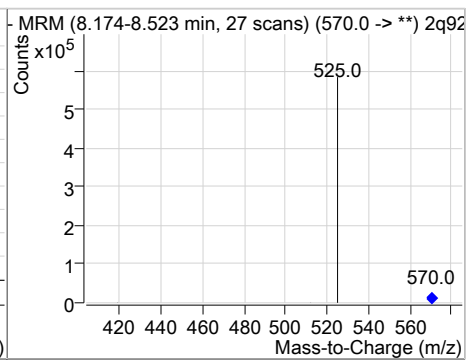




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.58	8.28	0.01	443172				

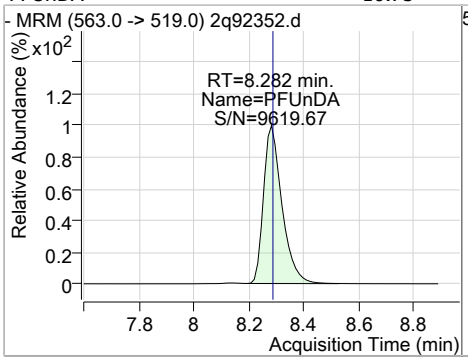


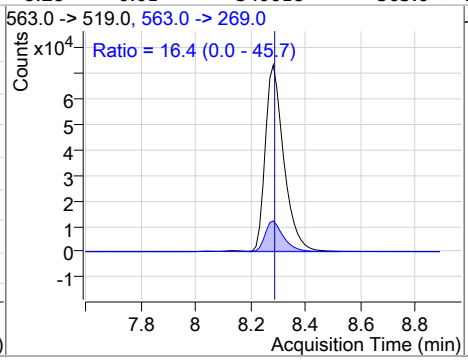


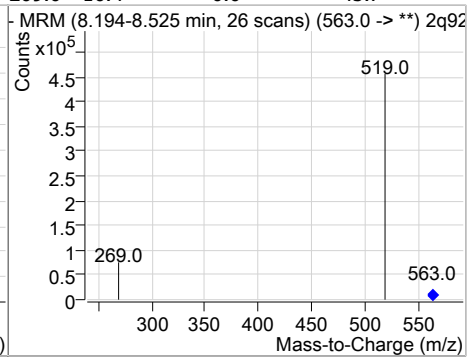


Perfluorinated Compounds by LC/MS/MS

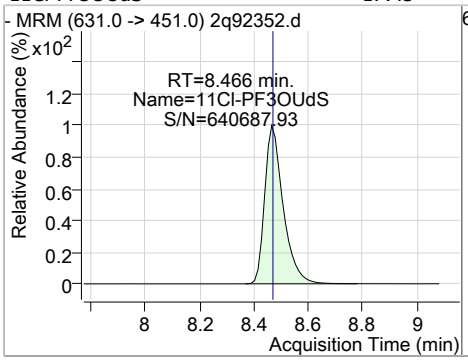
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.75	8.28	0.01	340018	563.0 -> 269.0	16.4	0.0	45.7

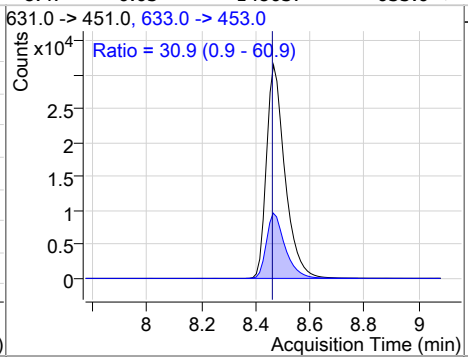


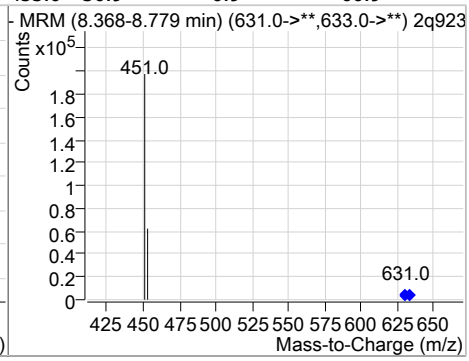




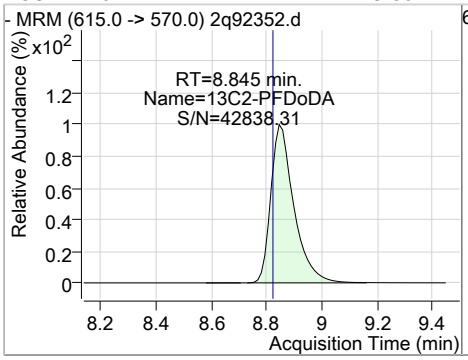
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.43	8.47	0.03	148037	633.0 -> 453.0	30.9	0.9	60.9

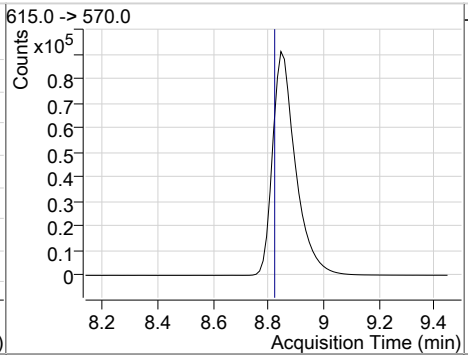


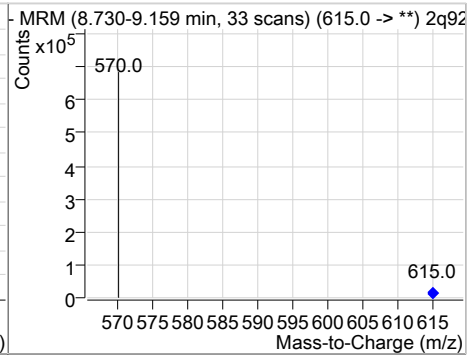




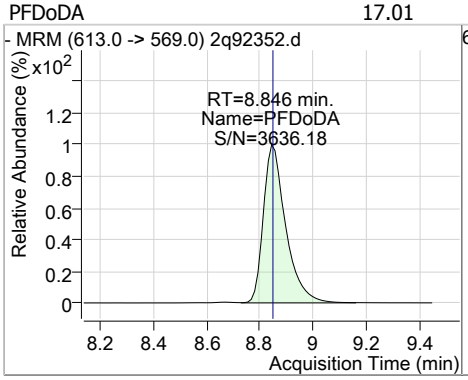
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.50	8.84	0.03	526826				

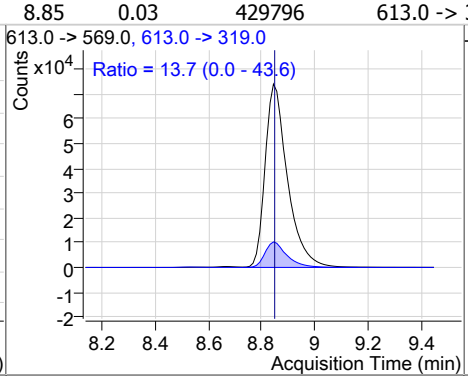


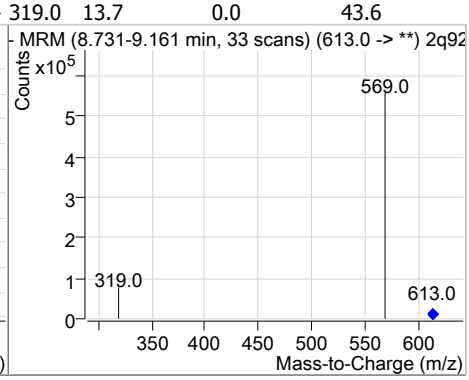




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	17.01	8.85	0.03	429796	613.0 -> 319.0	13.7	0.0	43.6

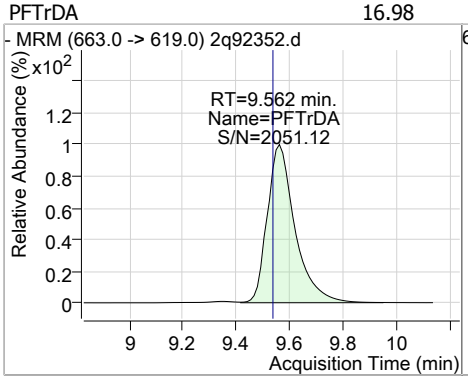


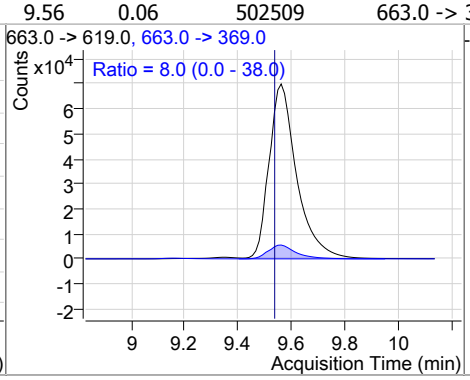


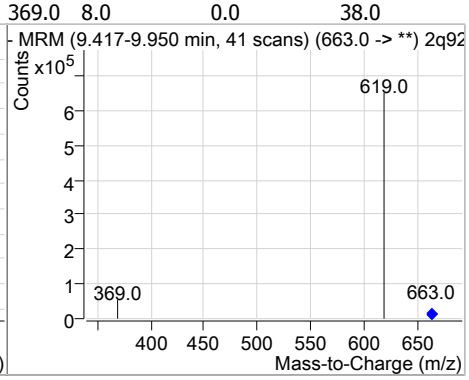


Perfluorinated Compounds by LC/MS/MS

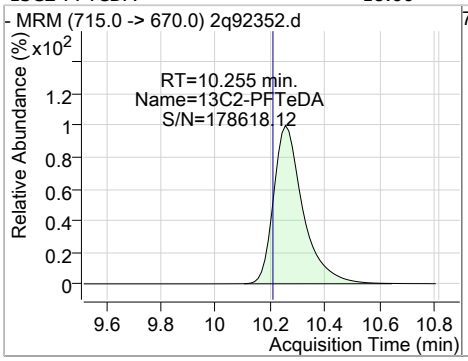
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.98	9.56	0.06	502509	663.0 -> 369.0	8.0	0.0	38.0

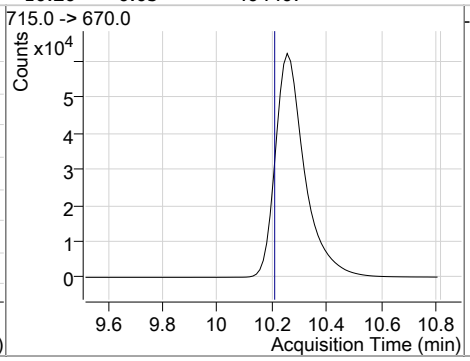


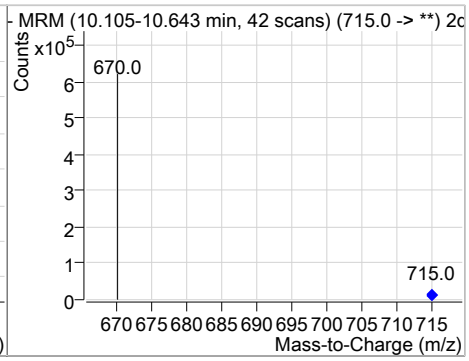




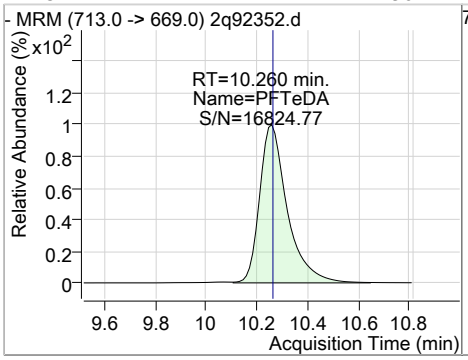
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.66	10.26	0.05	464407				

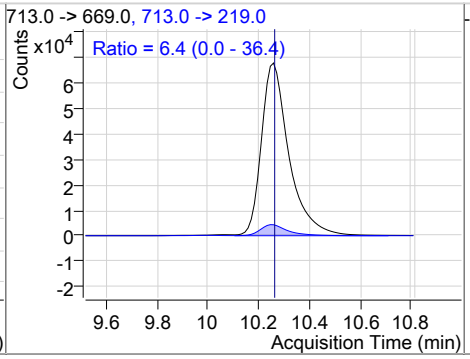


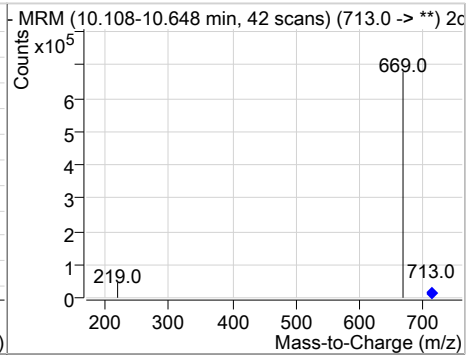




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.96	10.26	0.05	507716	713.0 -> 219.0	6.4	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1294-CC1287
Lab FileID: 2Q92352.D
Injection Time: 06/03/22 14:53
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 10:57 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.22	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/05/22 18:16

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92354.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/3/2022 3:39:23 PM
Sample Name : cc1287-1.0LL
Vial : P1-A3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1294.batch.bin
Sample Information : op91255,S2Q1294,250,,,1.0,1,water

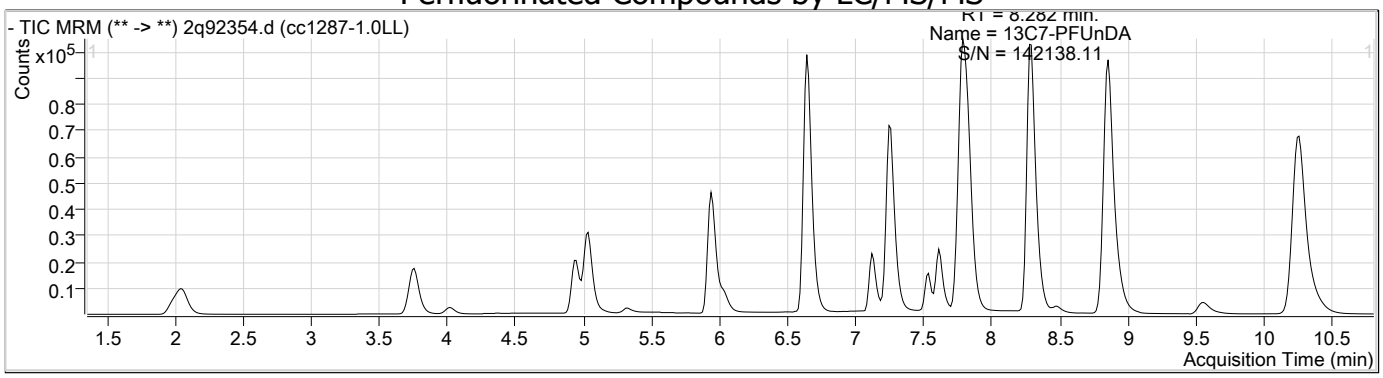
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	64725	20.00	µg/L	-0.013
M4-PFBA	2.039	217.0 -> 172.0	73441	20.00	µg/L	0.025
M5-PFPeA	3.761	268.0 -> 223.0	86006	20.00	µg/L	0.025
M5-PFHxA	5.039	318.0 -> 273.0	127565	20.00	µg/L	0.013
M4-PFHpA	5.941	367.0 -> 322.0	178044	20.00	µg/L	0.013
M8-PFOA	6.649	421.0 -> 376.0	247809	20.00	µg/L	0.000
M9-PFNA	7.265	472.0 -> 427.0	277996	20.00	µg/L	0.013
M6-PFDA	7.792	519.0 -> 474.0	366456	20.00	µg/L	0.013
M7-PFUnDA	8.282	570.0 -> 525.0	460117	20.00	µg/L	0.013
M2-PFDoDA	8.857	615.0 -> 570.0	523126	20.00	µg/L	0.039
M2-PFTeDA	10.255	715.0 -> 670.0	478839	20.00	µg/L	0.050
M8-FOSA	7.124	506.0 -> 78.0	75316	20.00	µg/L	-0.025
M3-PFBS	4.017	302.0 -> 99.0	9744	20.00	µg/L	0.013
M3-PFHxS	5.979	402.0 -> 99.0	14624	20.00	µg/L	0.013
M8-PFOS	7.237	507.0 -> 99.0	20607	20.00	µg/L	0.013
M2-4:2FTS	4.934	329.0 -> 81.0	8935	20.00	µg/L	0.000
M2-6:2FTS	6.646	429.0 -> 81.0	19673	20.00	µg/L	0.013
M2-8:2FTS	7.828	529.0 -> 81.0	29027	20.00	µg/L	0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	75904	20.00	µg/L	-0.013
M3-HFPO-DA	5.332	287.0 -> 169.0	5106	20.00	µg/L	0.013
M3-MeFOSA	7.539	515.0 -> 169.0	25923	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	8935	19.21	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.0%		
13C2-6:2FTS	6.646	429.0 -> 81.0	19673	19.02	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%		
13C2-8:2FTS	7.828	529.0 -> 81.0	29027	19.60	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C2-PFDoDA	8.857	615.0 -> 570.0	523126	19.37	µg/L	0.039
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C2-PFTeDA	10.255	715.0 -> 670.0	478839	19.24	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C3-PFBS	4.017	302.0 -> 99.0	9744	19.16	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%		
13C3-PFHxS	5.979	402.0 -> 99.0	14624	20.51	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C4-PFBA	2.039	217.0 -> 172.0	73441	19.01	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.0%		
13C4-PFHpA	5.941	367.0 -> 322.0	178044	19.18	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
d5-EtFOSAA	7.748	589.0 -> 419.0	64725	21.32	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.6%		
13C5-PFHxA	5.039	318.0 -> 273.0	127565	18.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
13C5-PFPeA	3.761	268.0 -> 223.0	86006	18.87	µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

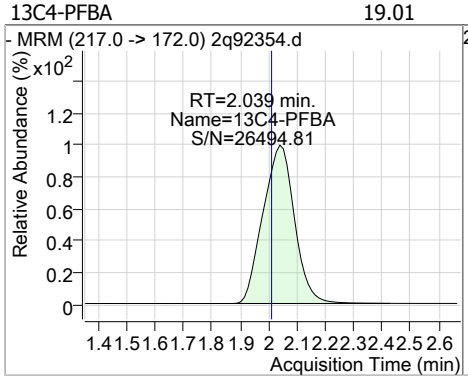
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.3%			
13C6-PFDA	7.792	519.0 -> 474.0	366456	20.12	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%			
13C7-PFUnDA	8.282	570.0 -> 525.0	460117	20.33	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%			
13C8-FOSA	7.124	506.0 -> 78.0	75316	20.46	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%			
13C8-PFOA	6.649	421.0 -> 376.0	247809	19.25	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%			
13C8-PFOS	7.237	507.0 -> 99.0	20607	19.86	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%			
13C9-PFNA	7.265	472.0 -> 427.0	277996	19.06	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.3%			
d3-MeFOSAA	7.610	573.0 -> 419.0	75904	19.79	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%			
13C3-HFPO-DA	5.332	287.0 -> 169.0	5106	19.61	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%			
d3-MeFOSA	7.539	515.0 -> 169.0	25923	18.52	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.6%			
Target Compounds							**QValue**
4:2FTS	4.937	327.0 -> 307.0	4610	0.98	µg/L		93
6:2FTS	6.647	427.0 -> 407.0	7336	1.01	µg/L		98
8:2FTS	7.829	527.0 -> 507.0	7046	1.02	µg/L		97
EtFOSAA	7.748	584.0 -> 419.0	3064	0.95	µg/L	m	99
FOSA	7.125	498.0 -> 78.0	3758	0.95	µg/L		100
MeFOSAA	7.611	570.0 -> 419.0	3592	1.03	µg/L	m	99
PFBA	2.046	213.0 -> 169.0	1917	1.02	µg/L		100
PFBS	4.019	299.0 -> 80.0	1676	1.03	µg/L		99
PFDA	7.793	513.0 -> 469.0	17693	0.95	µg/L		97
PFDoDA	8.858	613.0 -> 569.0	24505	0.98	µg/L		99
PFDS	8.228	599.0 -> 80.0	809	0.96	µg/L		92
PFHpA	5.943	363.0 -> 319.0	14776	1.02	µg/L		99
PFHpS	6.645	449.0 -> 80.0	1714	1.00	µg/L		100
PFHxA	5.041	313.0 -> 269.0	4669	0.99	µg/L		98
PFHxS	5.980	399.0 -> 80.0	1807	0.98	µg/L	m	98
PFNA	7.265	463.0 -> 419.0	16072	1.04	µg/L		98
PFNS	7.751	549.0 -> 80.0	1515	1.04	µg/L		97
PFOA	6.649	413.0 -> 369.0	13443	1.00	µg/L		94
PFOS	7.238	499.0 -> 80.0	1877	1.04	µg/L	m	97
PFPeA	3.764	263.0 -> 219.0	7006	1.06	µg/L		100
PFPeS	5.145	349.0 -> 80.0	1173	1.06	µg/L		100
PFTeDA	10.247	713.0 -> 669.0	29764	1.02	µg/L		99
PFTrDA	9.562	663.0 -> 619.0	28848	0.98	µg/L		100
PFUnDA	8.282	563.0 -> 519.0	20320	0.96	µg/L		100
11Cl-PF3OUdS	8.478	631.0 -> 451.0	8585	1.02	µg/L		99
9Cl-PF3ONS	7.511	531.0 -> 351.0	1821	0.92	µg/L		94
ADONA	6.044	377.0 -> 251.0	18113	0.97	µg/L		99
HFPO-DA	5.326	329.0 -> 169.0	1865	1.01	µg/L		94
MeFOSA	7.541	512.0 -> 219.0	1088	1.00	µg/L		88

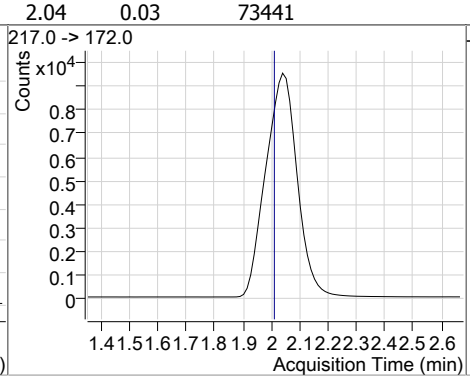
= Qualifier out of range, m = manually integrated, + = Area summed

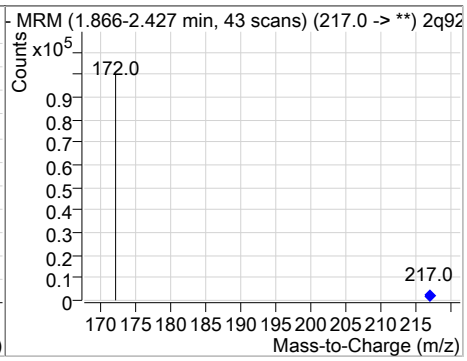
Perfluorinated Compounds by LC/MS/MS



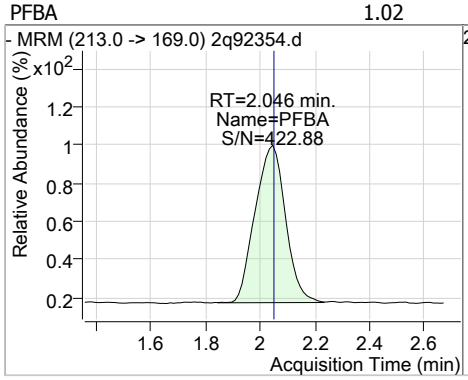
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.01	2.04	0.03	73441				

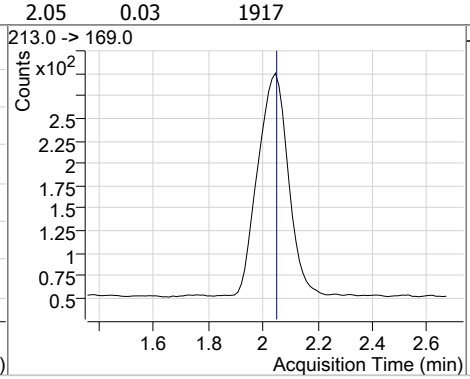


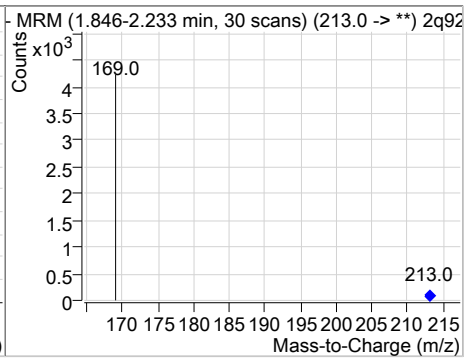




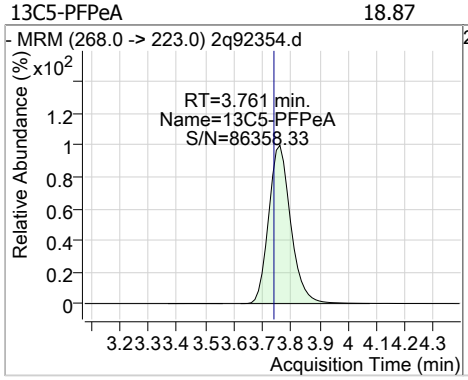
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.02	2.05	0.03	1917				

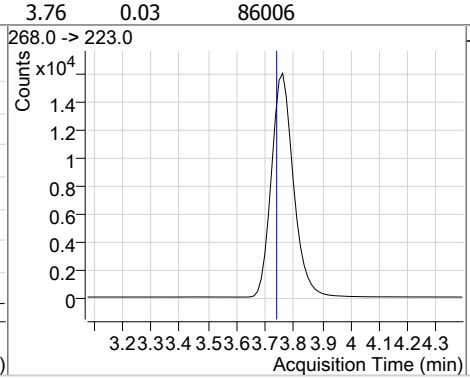


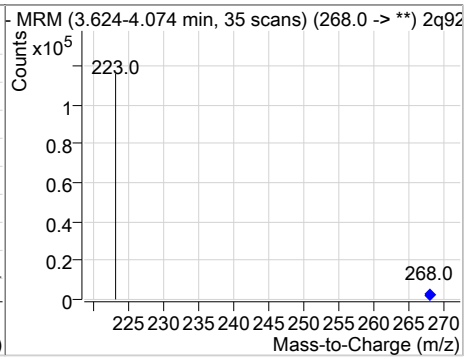




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.87	3.76	0.03	86006				

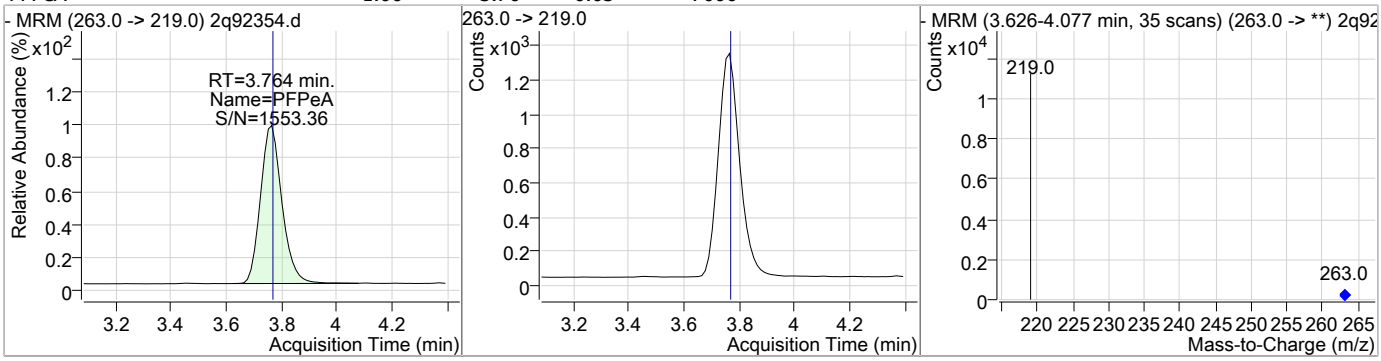




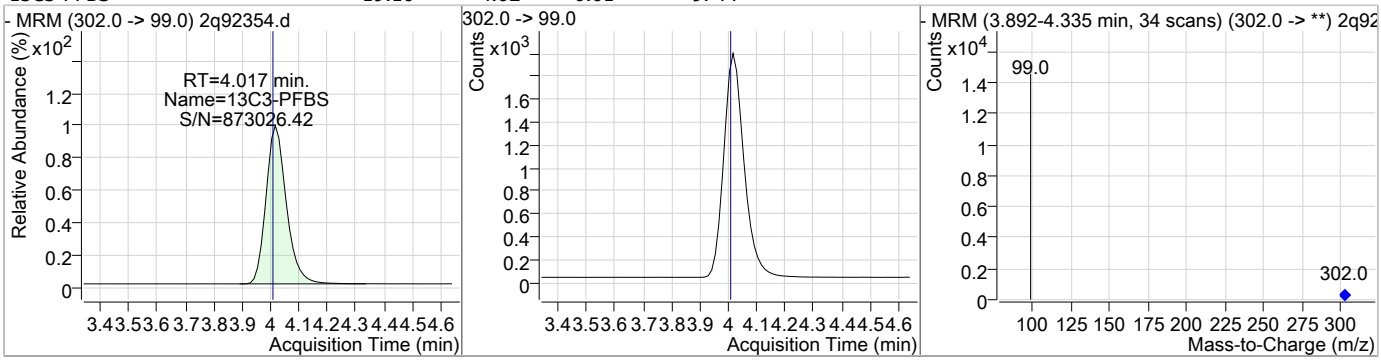


Perfluorinated Compounds by LC/MS/MS

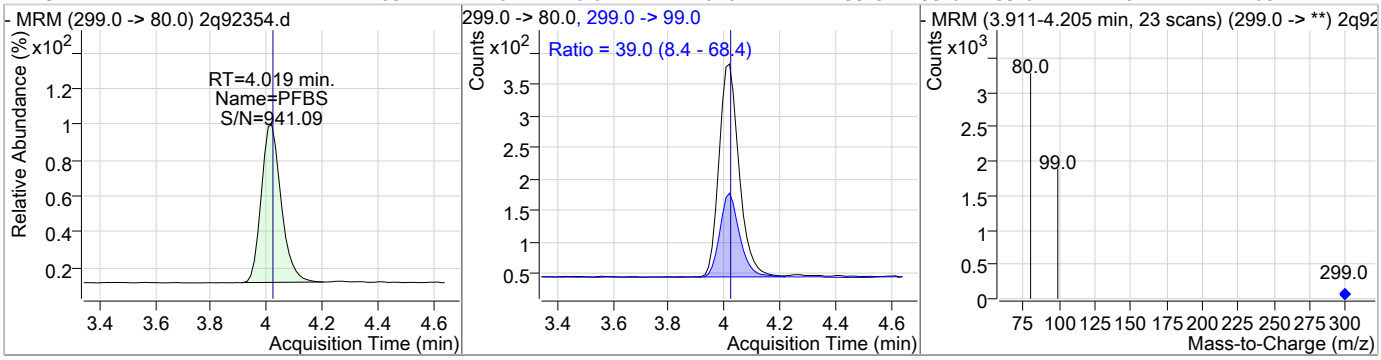
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.06	3.76	0.03	7006				



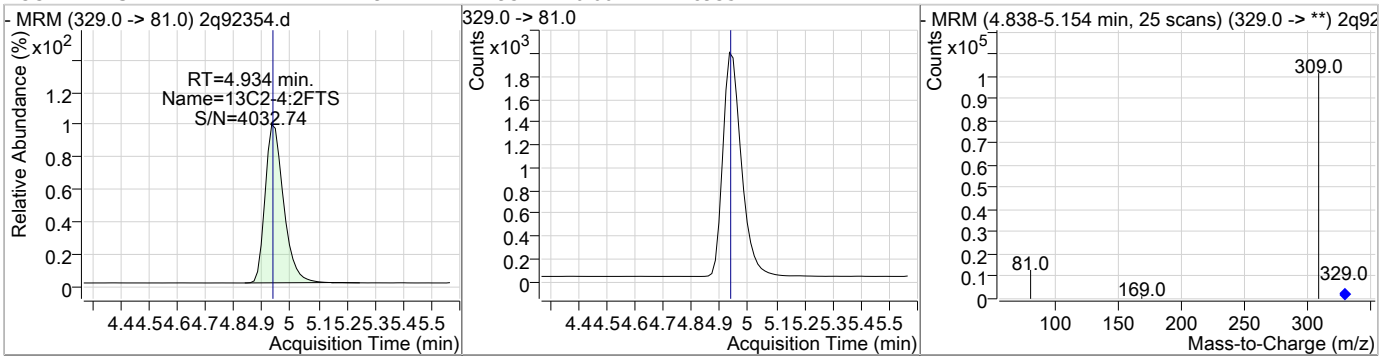
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.16	4.02	0.01	9744				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.03	4.02	0.01	1676	299.0 -> 99.0	39.0	8.4	68.4

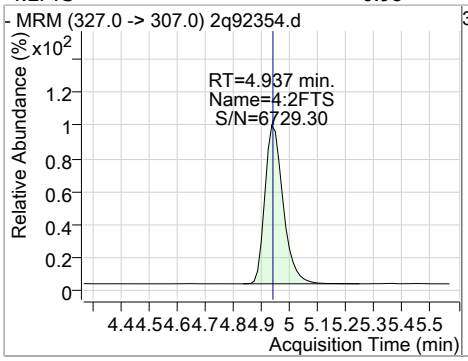


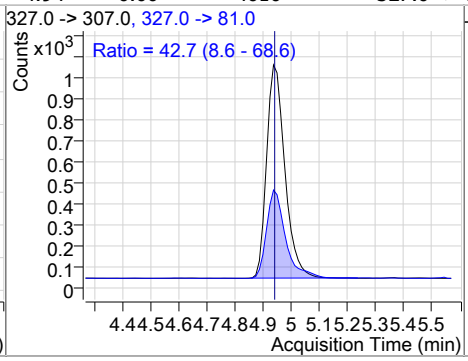
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.21	4.93	0.00	8935				

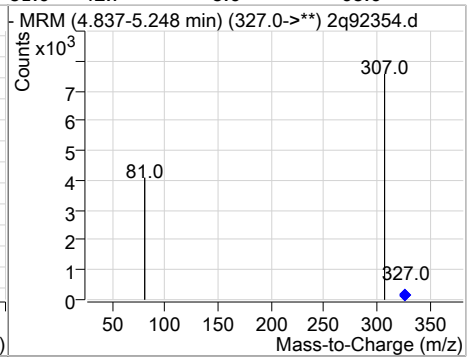


Perfluorinated Compounds by LC/MS/MS

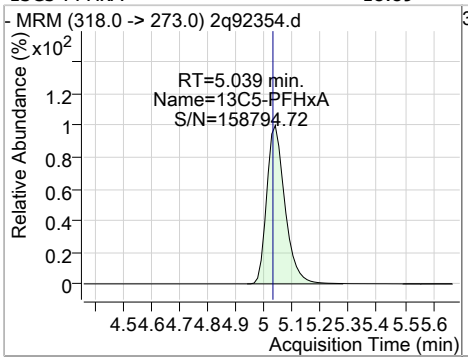
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.98	4.94	0.00	4610	327.0 -> 81.0	42.7	8.6	68.6

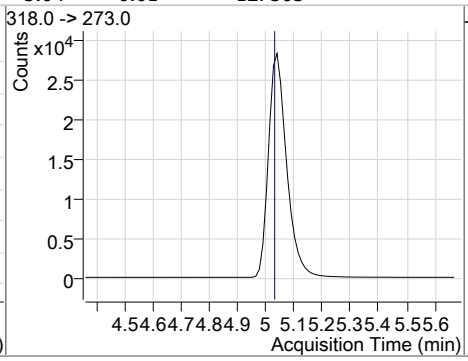


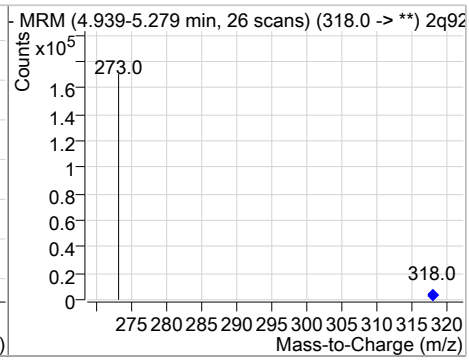




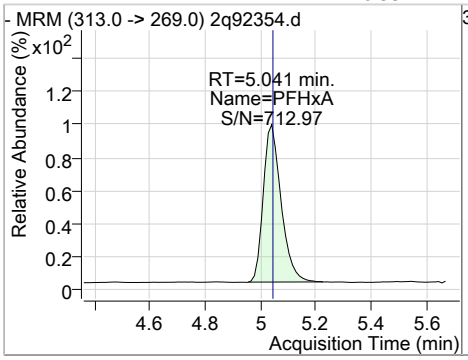
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.89	5.04	0.01	127565				

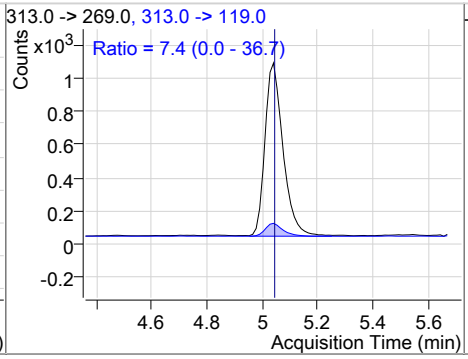


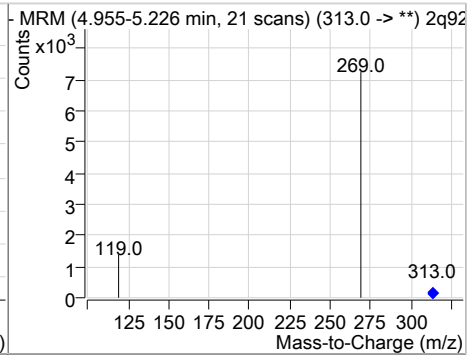




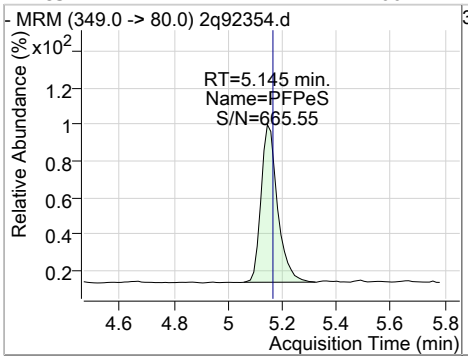
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.99	5.04	0.01	4669	313.0 -> 119.0	7.4	0.0	36.7

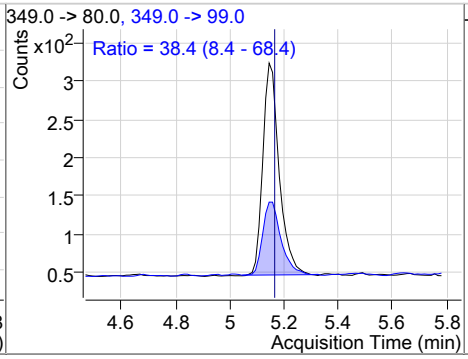


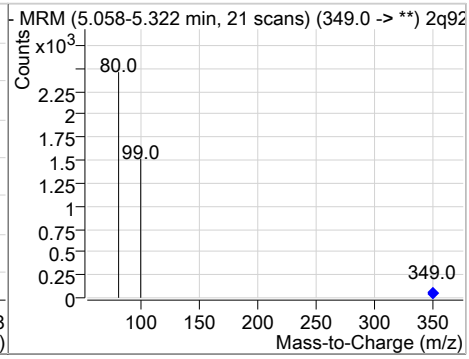




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.06	5.15	0.00	1173	349.0 -> 99.0	38.4	8.4	68.4

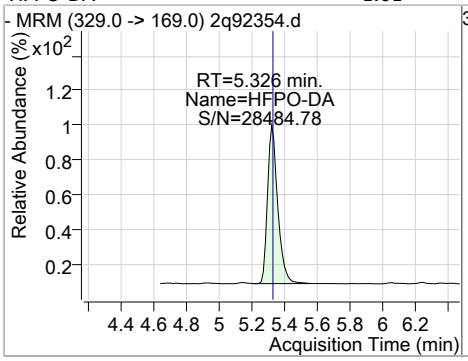


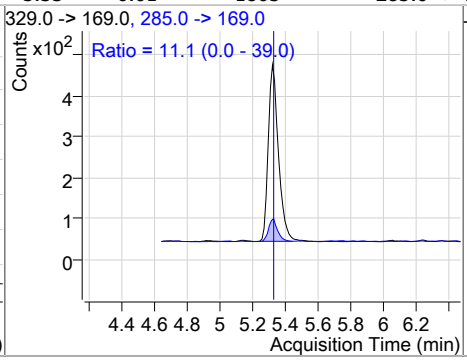


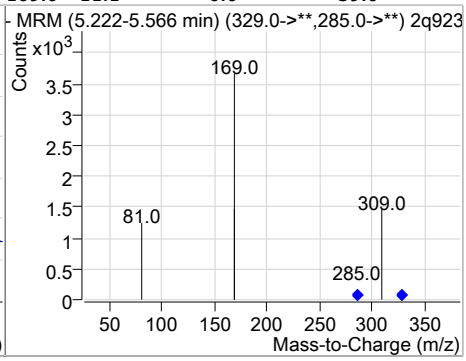


Perfluorinated Compounds by LC/MS/MS

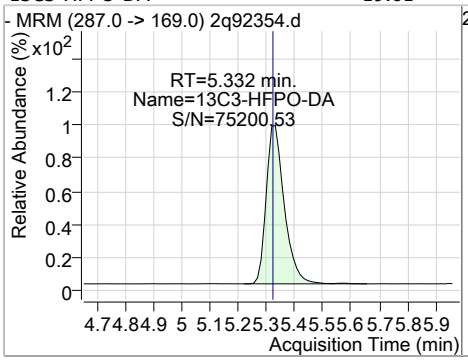
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.01	5.33	0.01	1865	285.0 -> 169.0	11.1	0.0	39.0

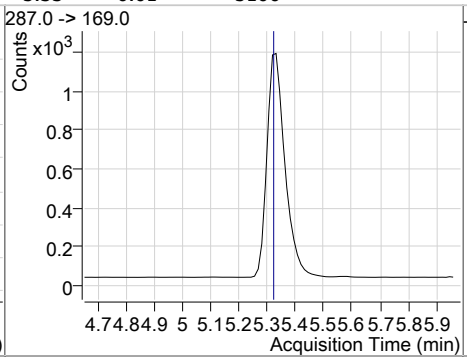


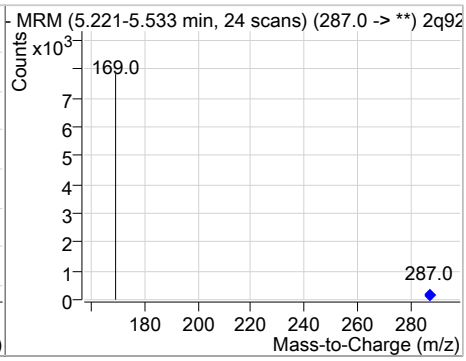




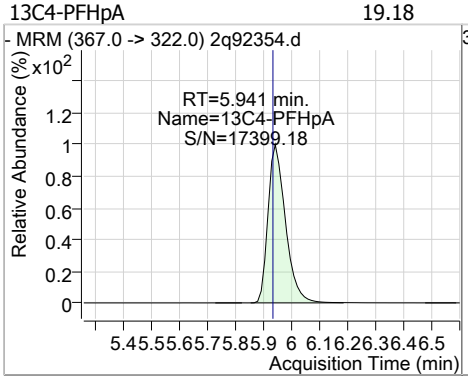
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	19.61	5.33	0.01	5106				

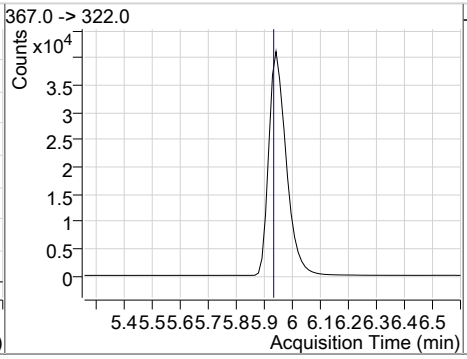


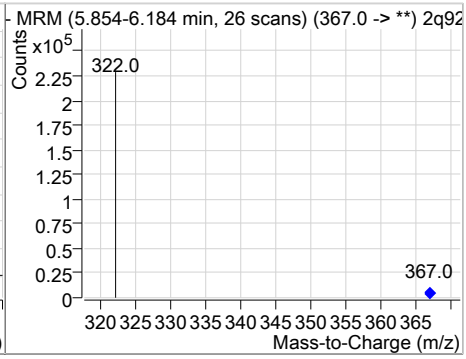




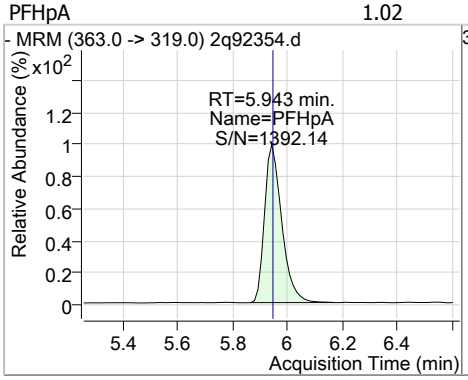
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.18	5.94	0.01	178044				

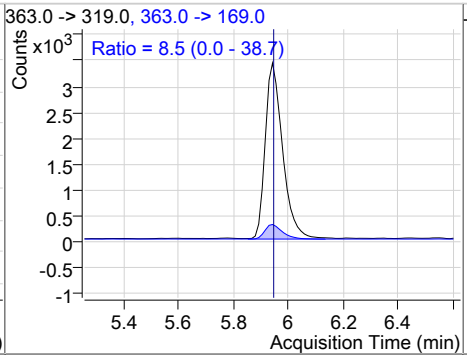


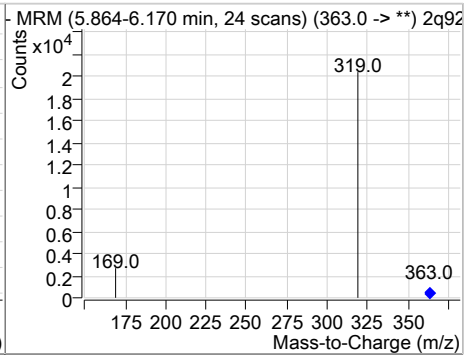




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.02	5.94	0.01	14776	363.0 -> 169.0	8.5	0.0	38.7

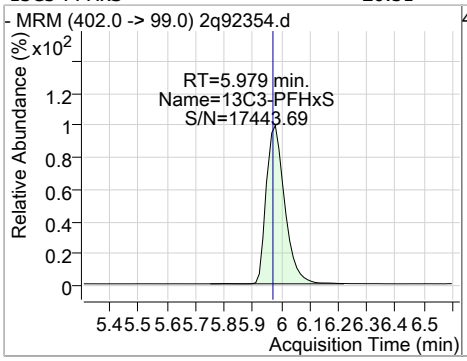


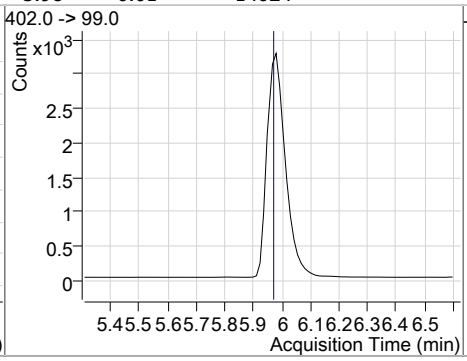


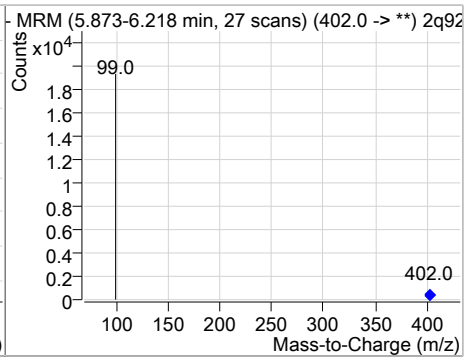


Perfluorinated Compounds by LC/MS/MS

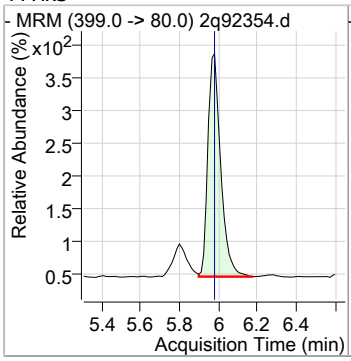
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.51	5.98	0.01	14624				

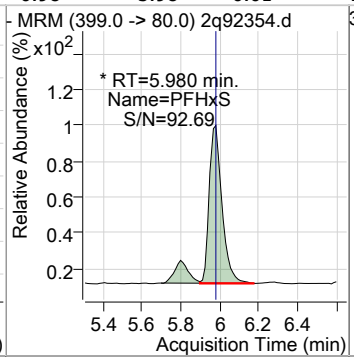


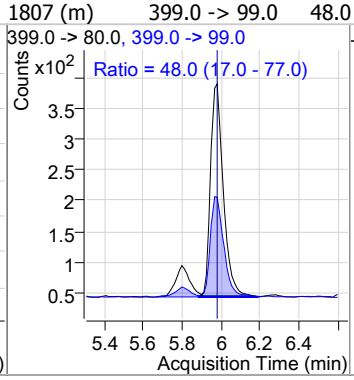


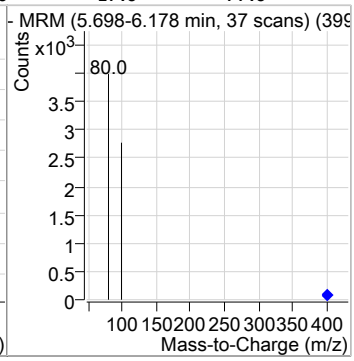


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.98	5.98	0.01	1807 (m)	399.0 -> 99.0	48.0	17.0	77.0

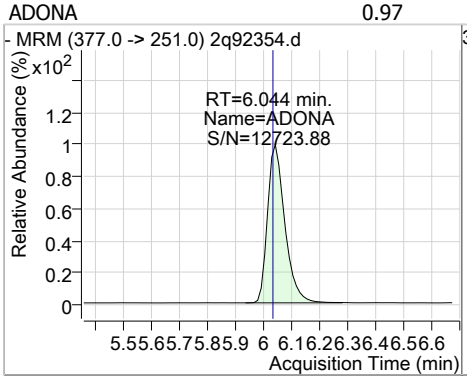


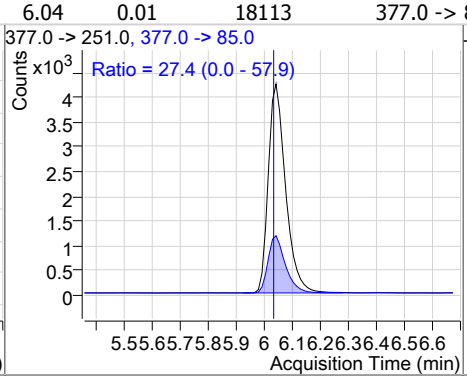


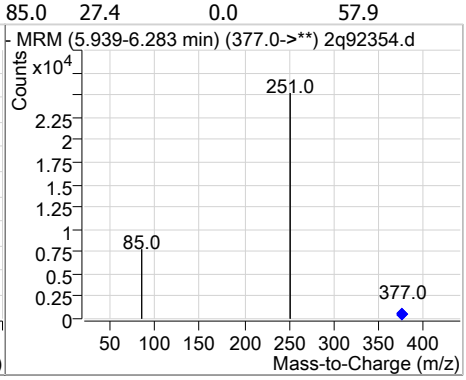




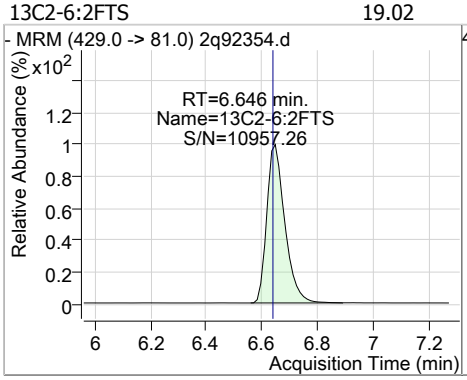
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.97	6.04	0.01	18113	377.0 -> 85.0	27.4	0.0	57.9

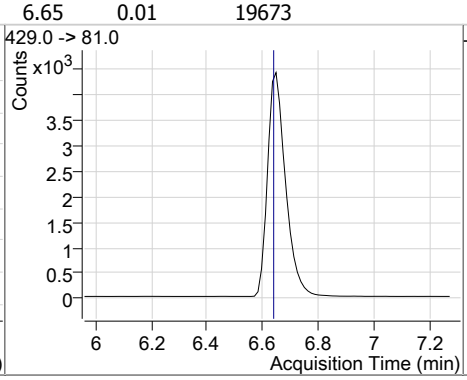


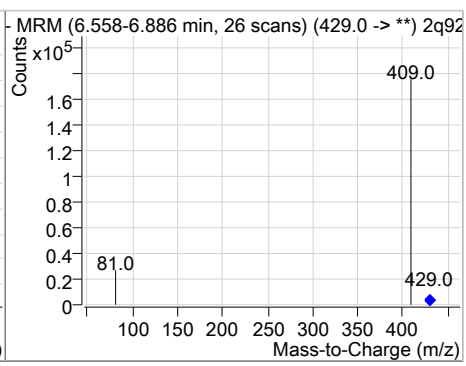




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.02	6.65	0.01	19673				

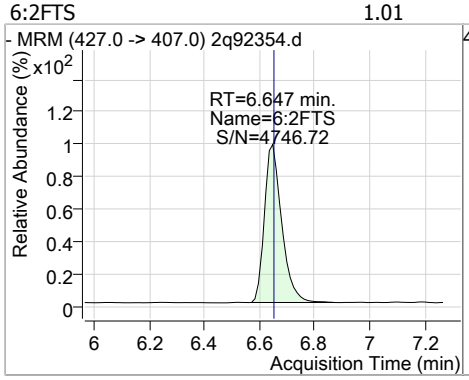


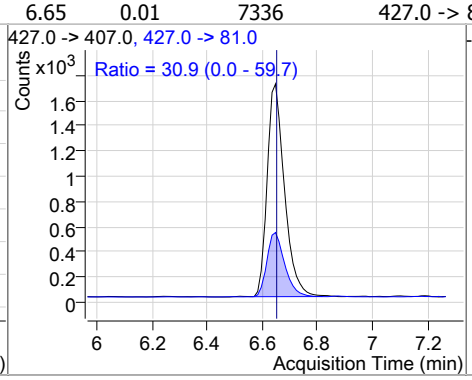


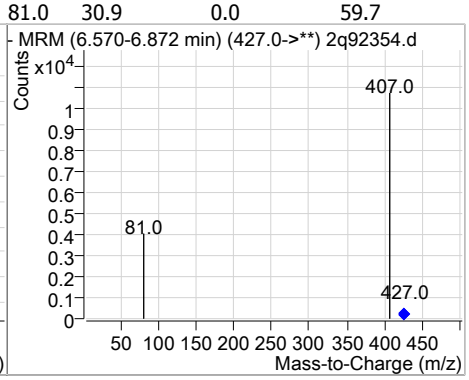


Perfluorinated Compounds by LC/MS/MS

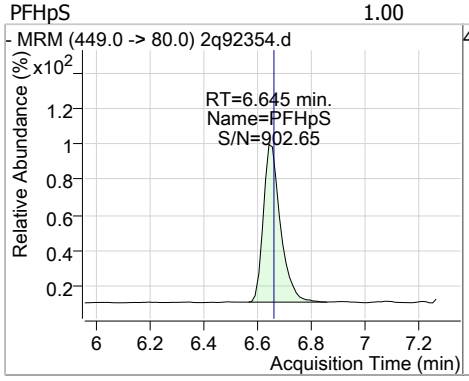
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.01	6.65	0.01	7336	427.0 -> 81.0	30.9	0.0	59.7

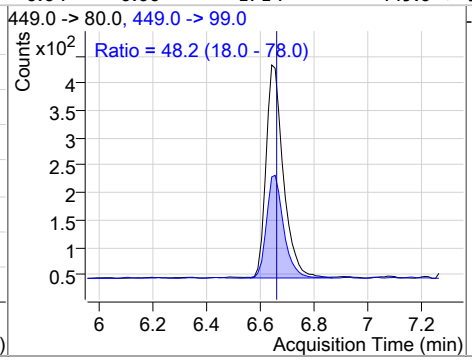


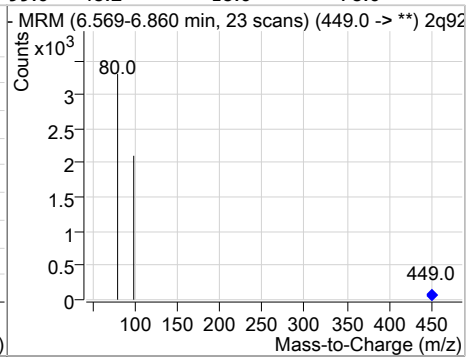




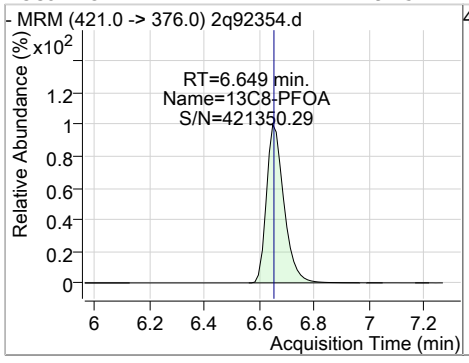
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.00	6.64	0.00	1714	449.0 -> 99.0	48.2	18.0	78.0

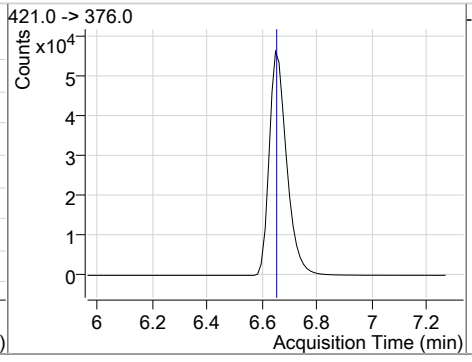


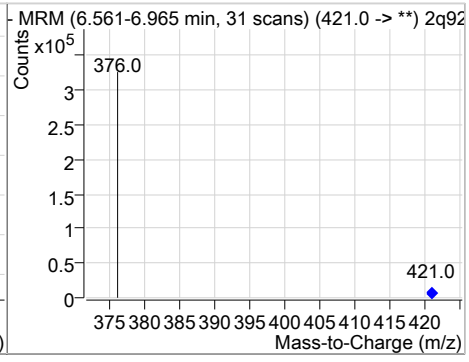




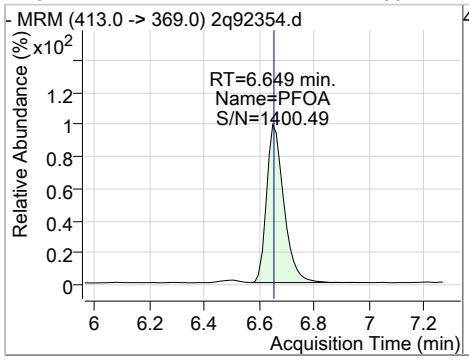
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.25	6.65	0.00	247809				

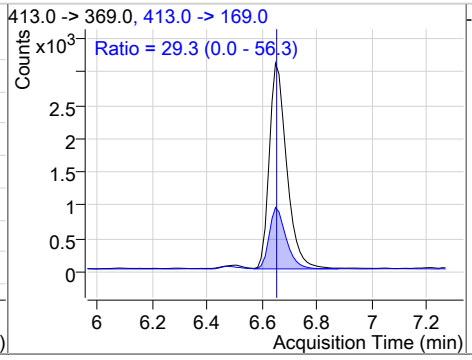


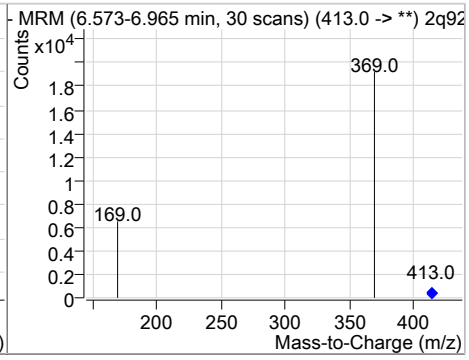




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.00	6.65	0.00	13443	413.0 -> 169.0	29.3	0.0	56.3

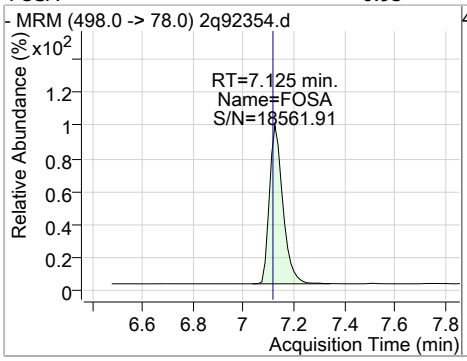


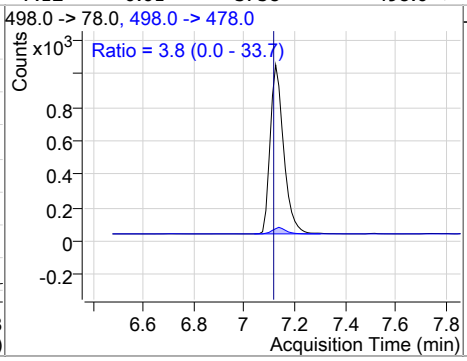


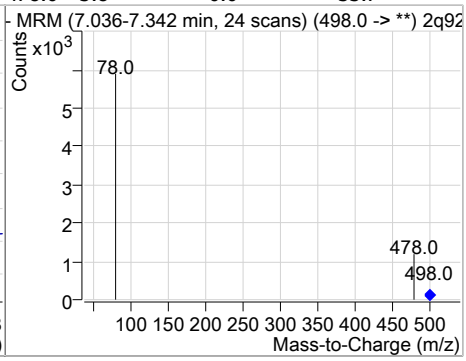


Perfluorinated Compounds by LC/MS/MS

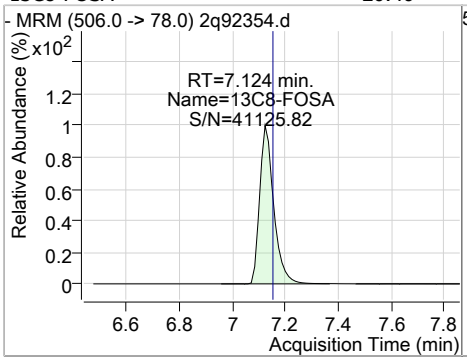
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.95	7.12	-0.01	3758	498.0 -> 478.0	3.8	0.0	33.7

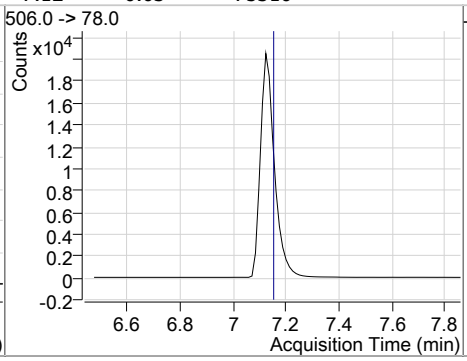


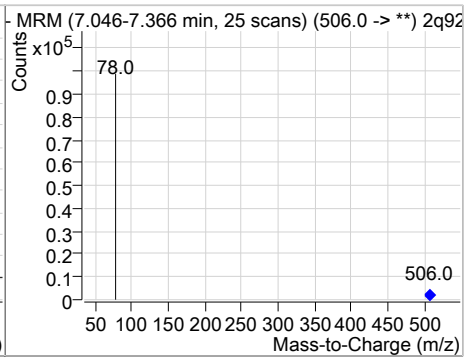




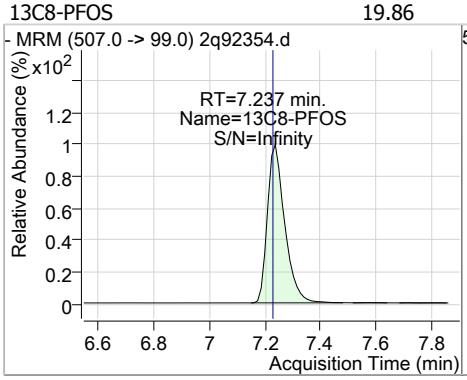
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.46	7.12	-0.03	75316				

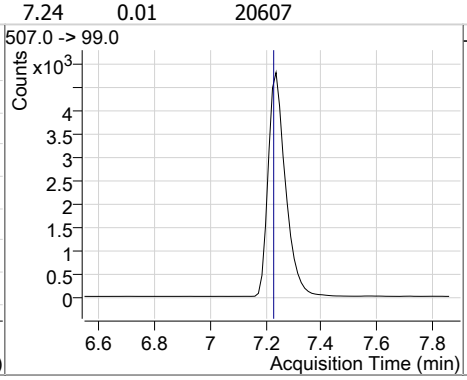


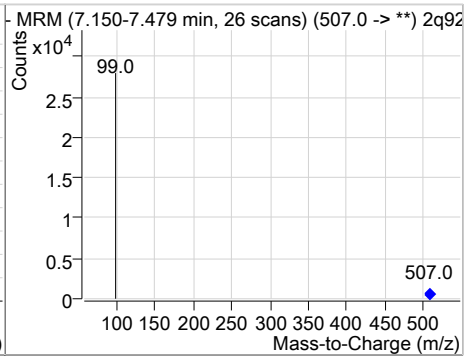




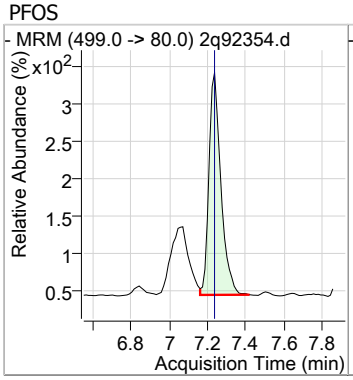
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.86	7.24	0.01	20607				

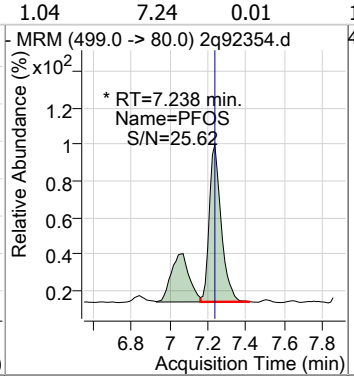


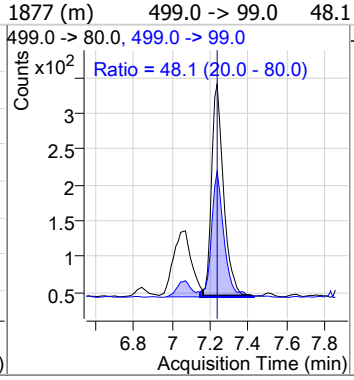


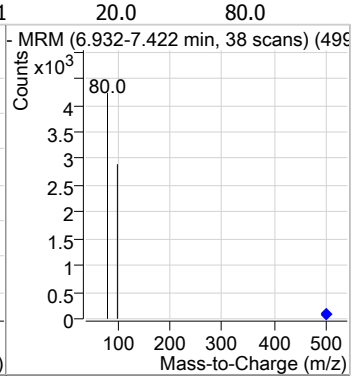


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.04	7.24	0.01	1877 (m)	499.0 -> 99.0	48.1	20.0	80.0



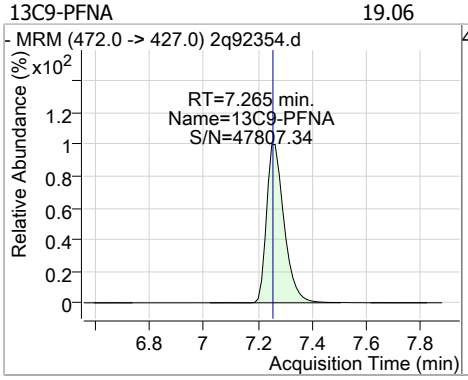


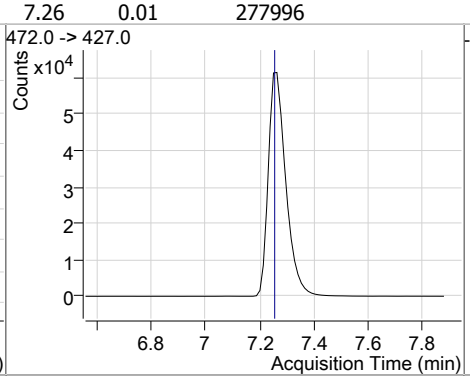


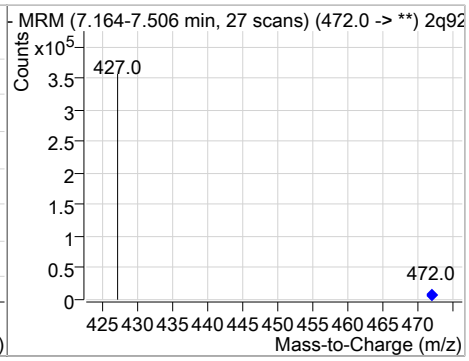


Perfluorinated Compounds by LC/MS/MS

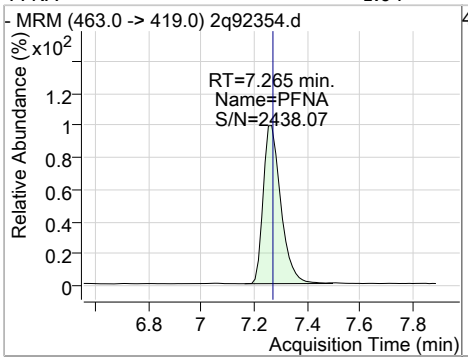
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.06	7.26	0.01	277996				

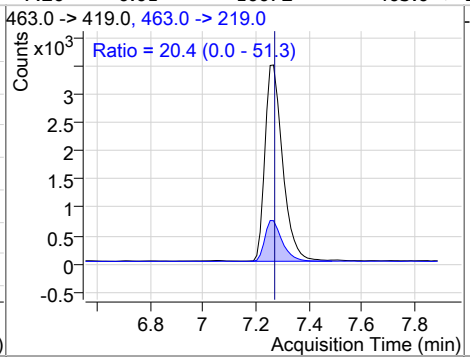


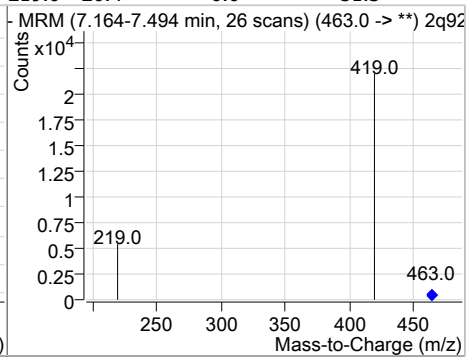




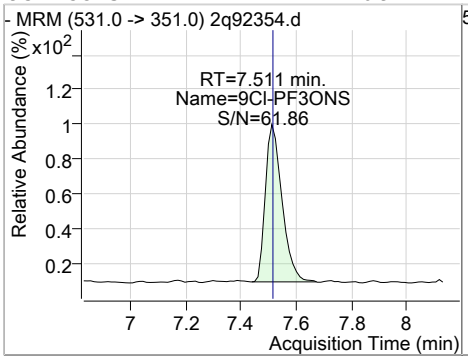
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.04	7.26	0.01	16072	463.0 -> 219.0	20.4	0.0	51.3

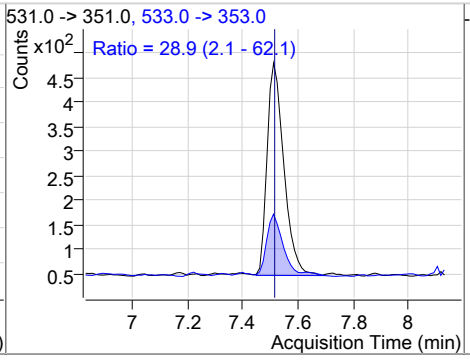


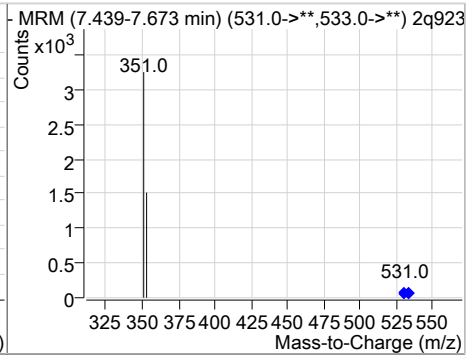




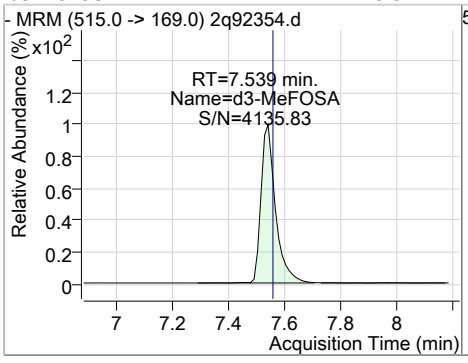
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.92	7.51	0.01	1821	533.0 -> 353.0	28.9	2.1	62.1

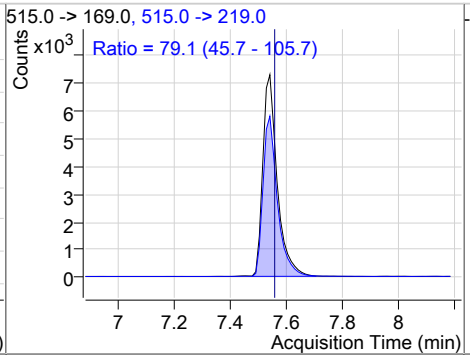


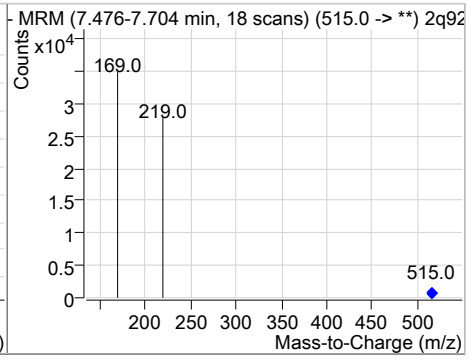




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	18.52	7.54	-0.01	25923	515.0 -> 219.0	79.1	45.7	105.7

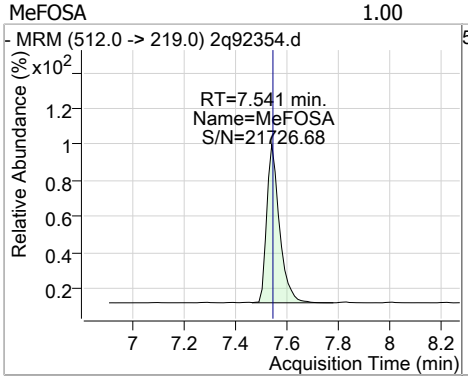


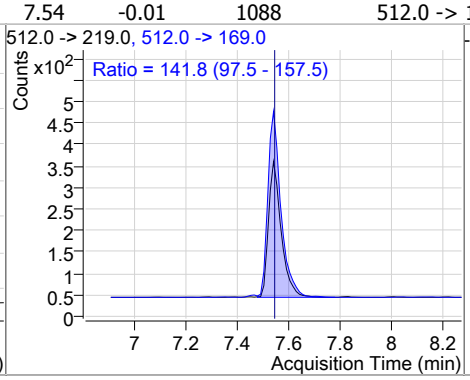


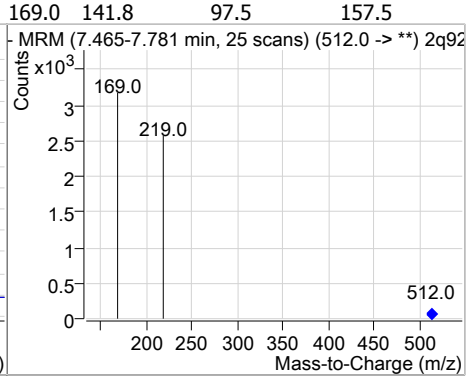


Perfluorinated Compounds by LC/MS/MS

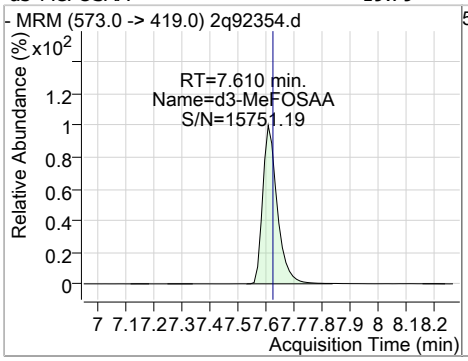
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.00	7.54	-0.01	1088	512.0 -> 169.0	141.8	97.5	157.5

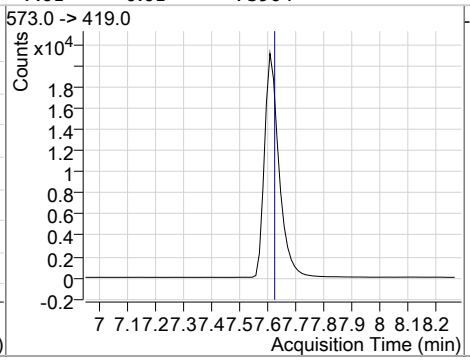


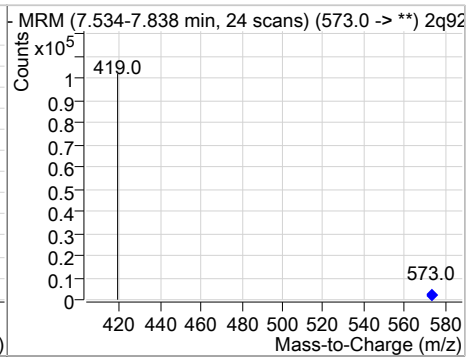




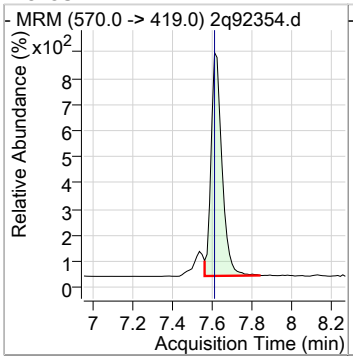
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.79	7.61	-0.01	75904				

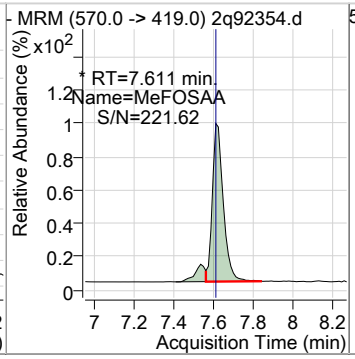


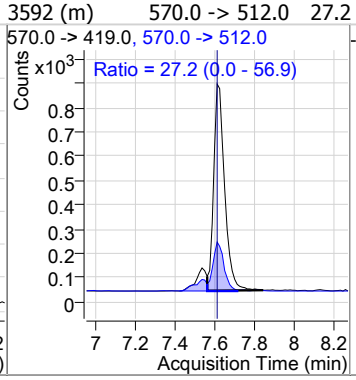


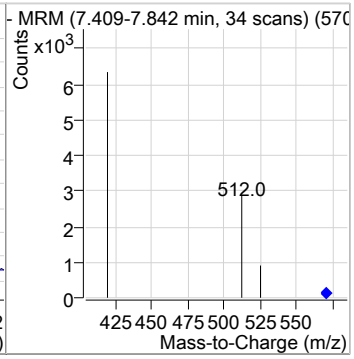


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.03	7.61	-0.01	3592 (m)	570.0 -> 512.0	27.2	0.0	56.9

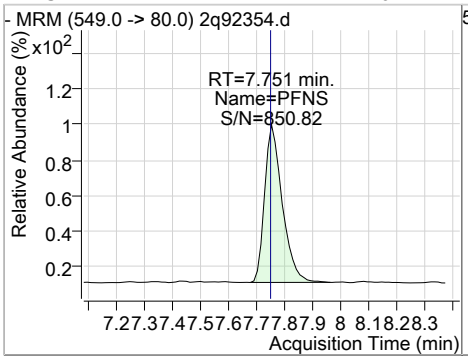


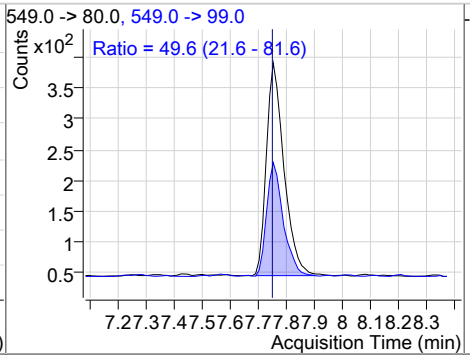


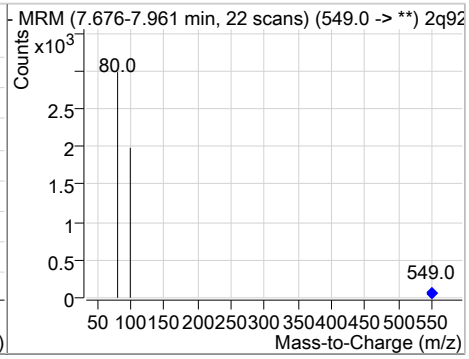




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.04	7.75	0.01	1515	549.0 -> 99.0	49.6	21.6	81.6

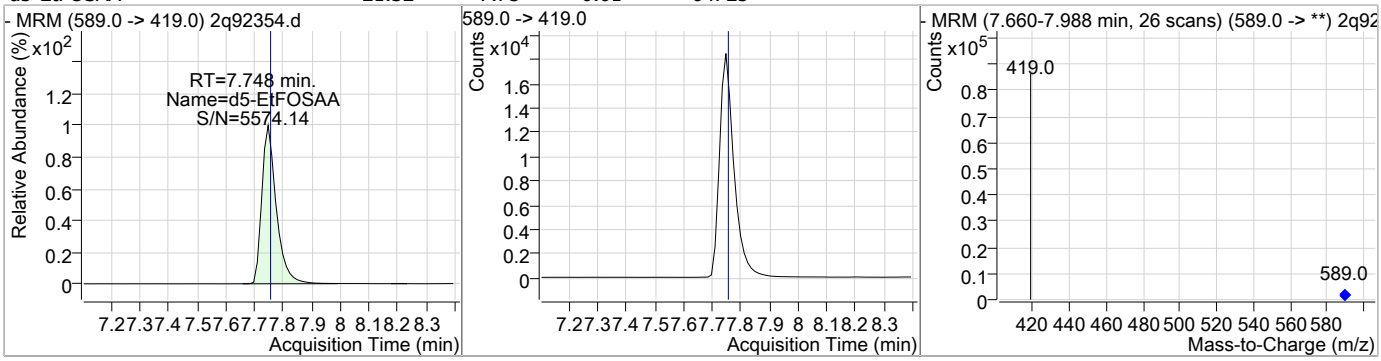




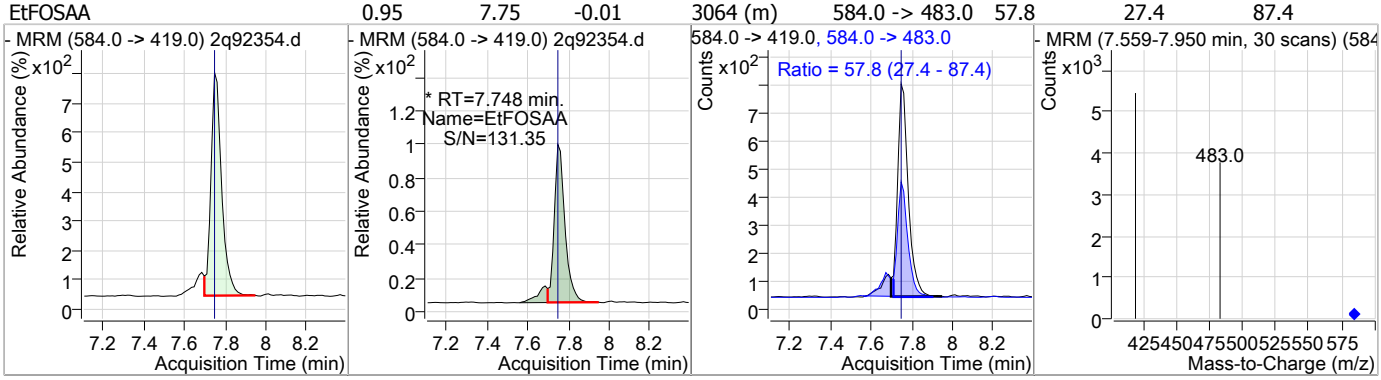


Perfluorinated Compounds by LC/MS/MS

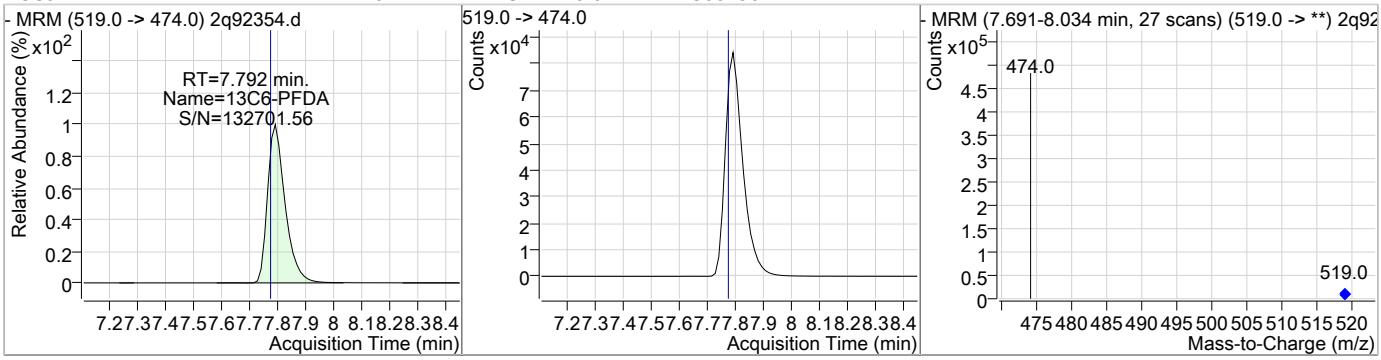
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	21.32	7.75	-0.01	64725				



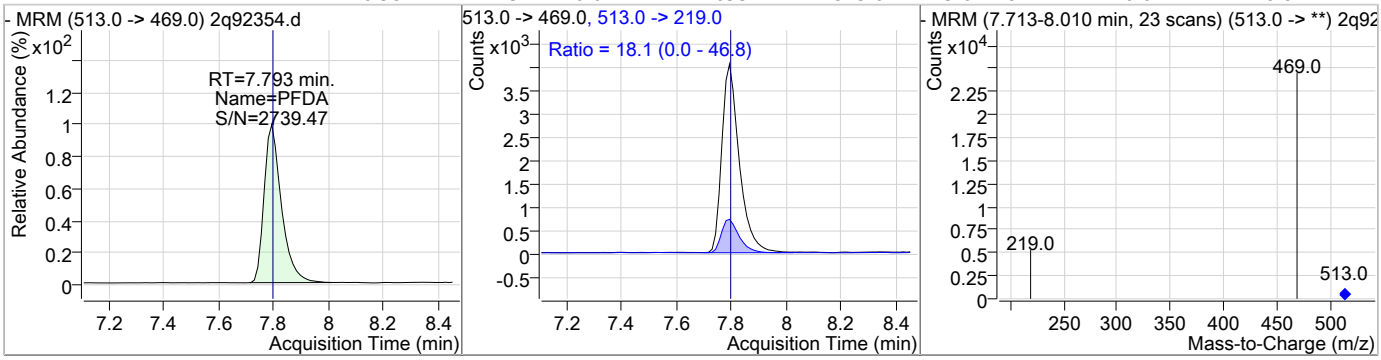
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.95	7.75	-0.01	3064 (m)	584.0 -> 483.0	57.8	27.4	87.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.12	7.79	0.01	366456				

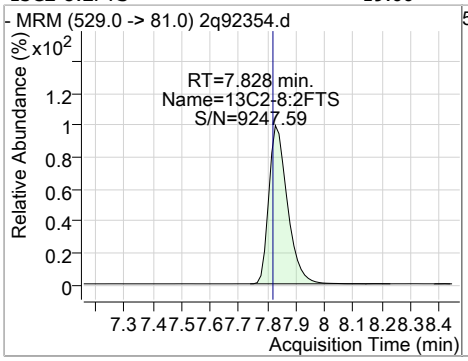


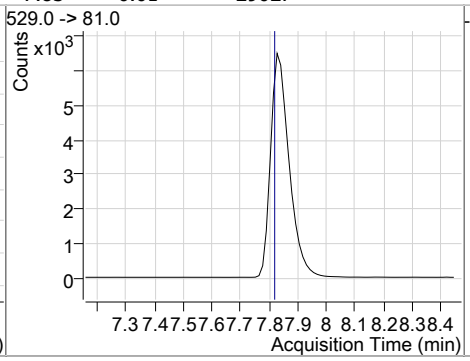
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.95	7.79	0.01	17693	513.0 -> 219.0	18.1	0.0	46.8

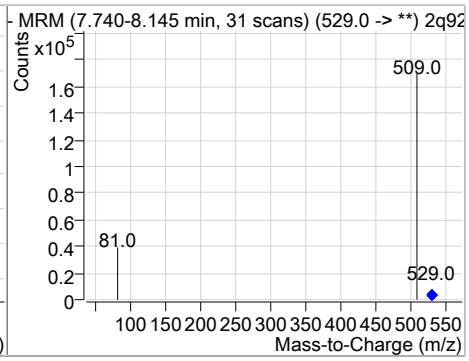


Perfluorinated Compounds by LC/MS/MS

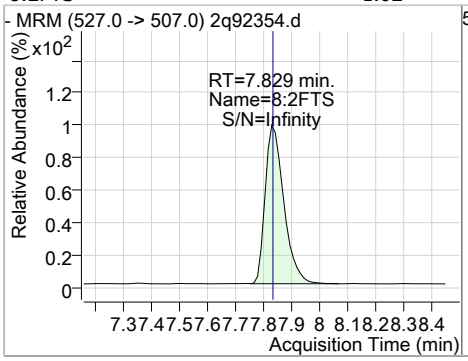
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.60	7.83	0.01	29027				

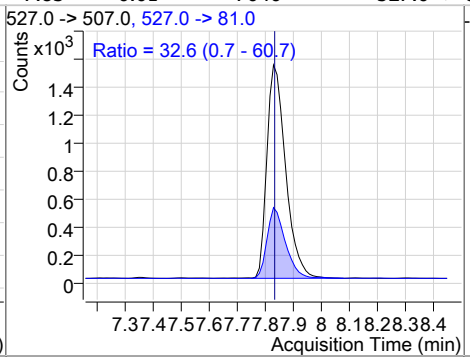


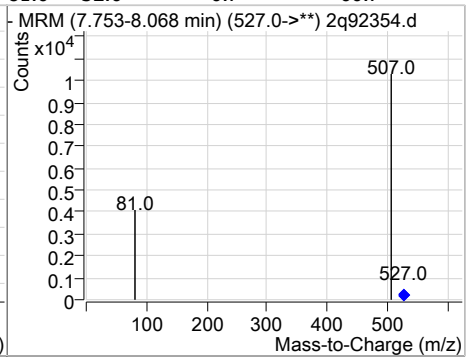




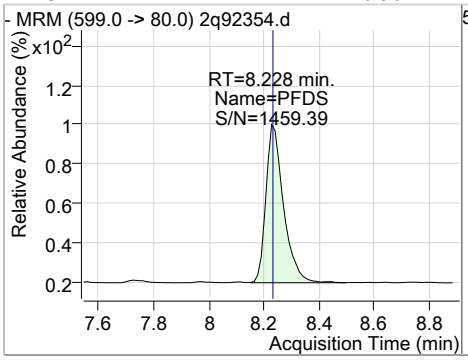
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.02	7.83	0.01	7046	527.0 -> 81.0	32.6	0.7	60.7

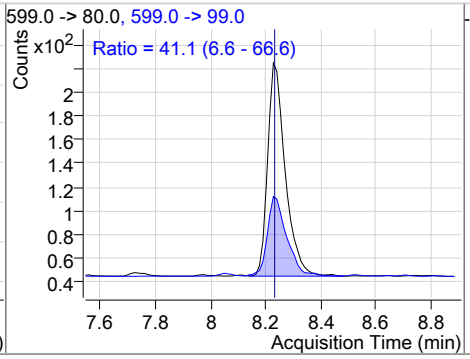


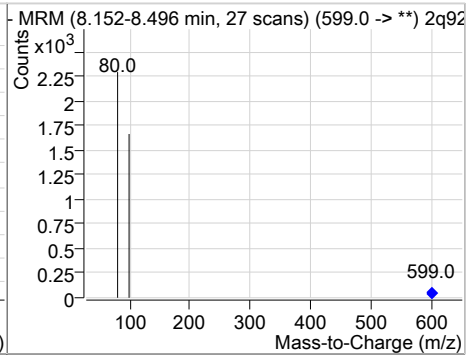




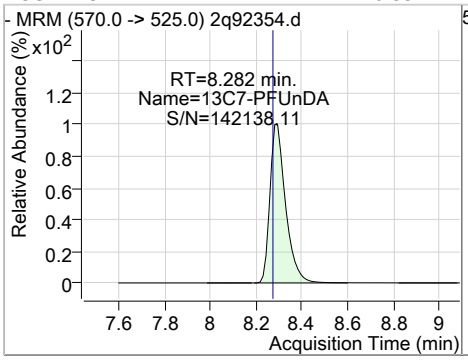
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.96	8.23	0.01	809	599.0 -> 99.0	41.1	6.6	66.6

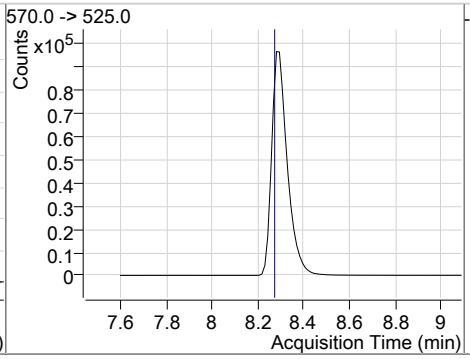


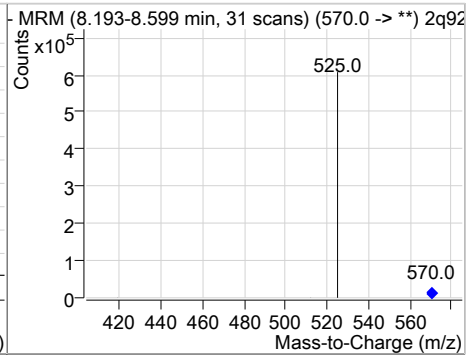




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.33	8.28	0.01	460117				

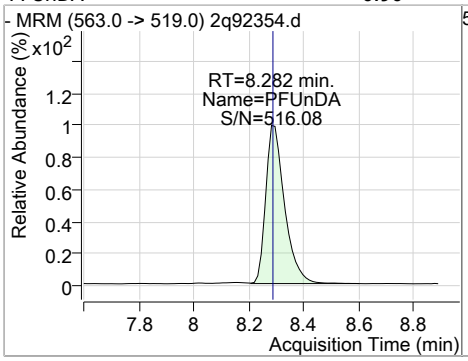


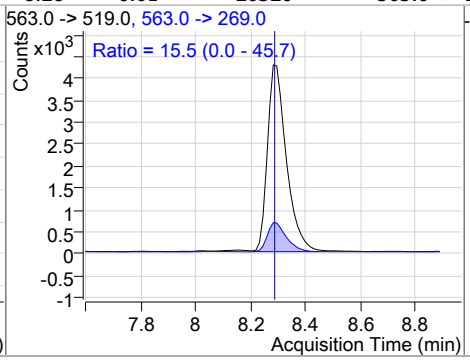


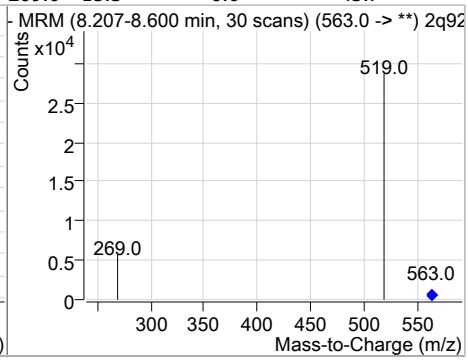


Perfluorinated Compounds by LC/MS/MS

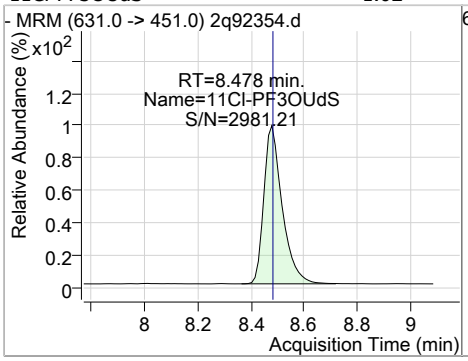
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.96	8.28	0.01	20320	563.0 -> 269.0	15.5	0.0	45.7

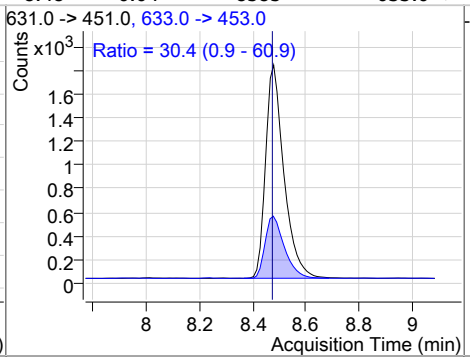


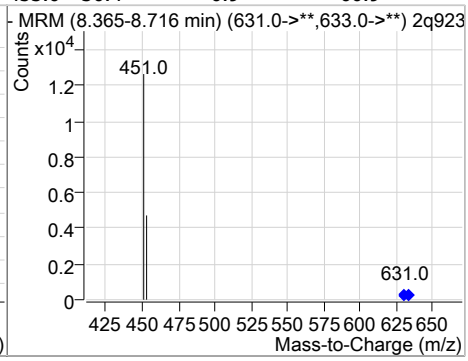




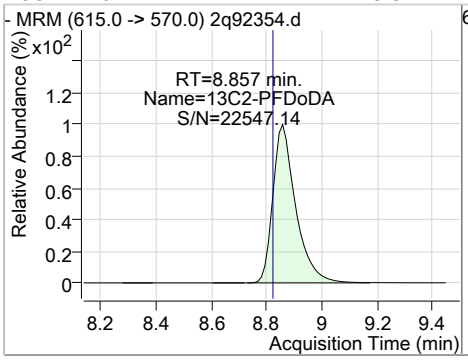
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.02	8.48	0.04	8585	633.0 -> 453.0	30.4	0.9	60.9

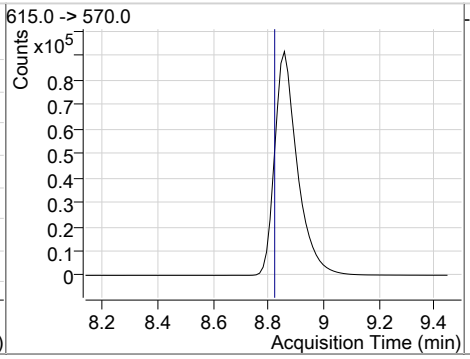


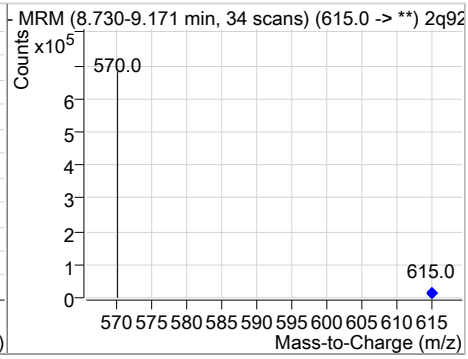




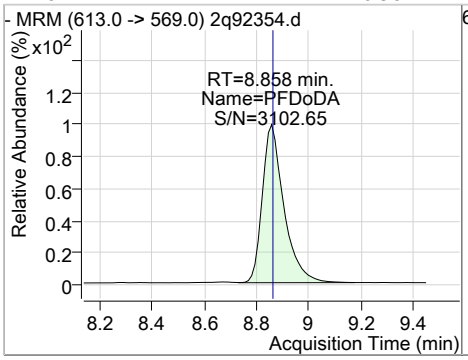
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.37	8.86	0.04	523126				

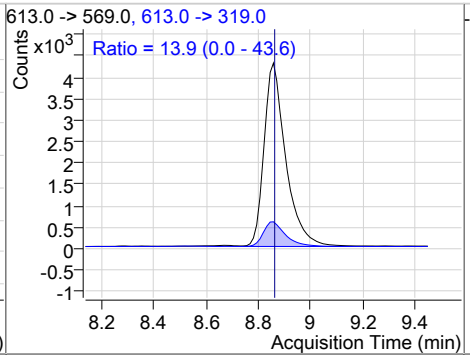


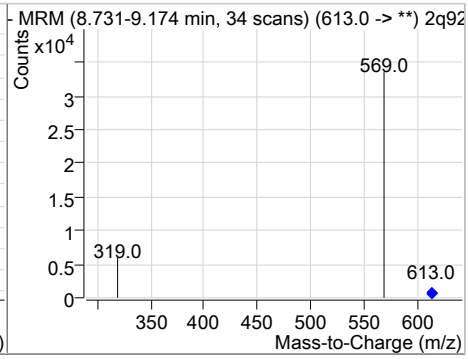




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.98	8.86	0.04	24505	613.0 -> 319.0	13.9	0.0	43.6

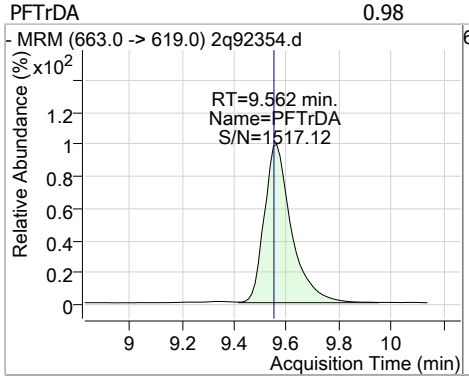


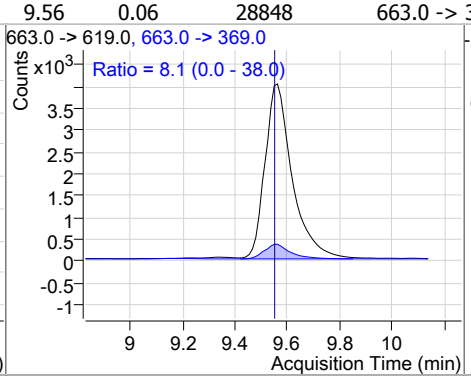


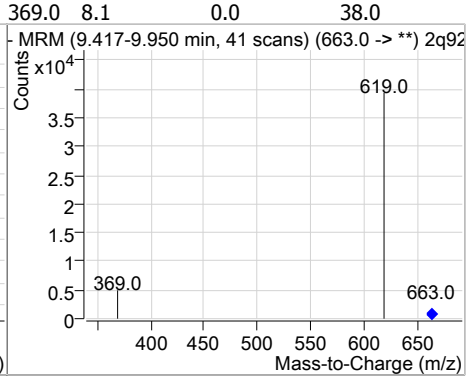


Perfluorinated Compounds by LC/MS/MS

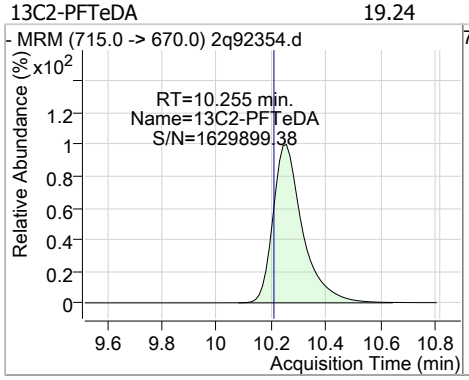
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.98	9.56	0.06	28848	663.0 -> 369.0	8.1	0.0	38.0

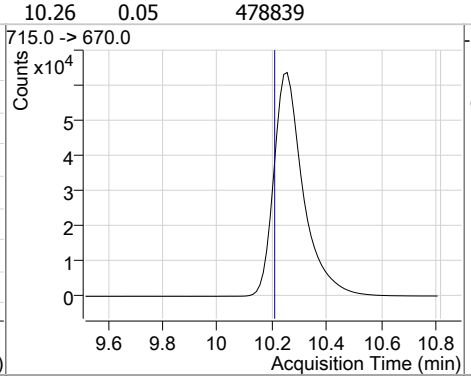


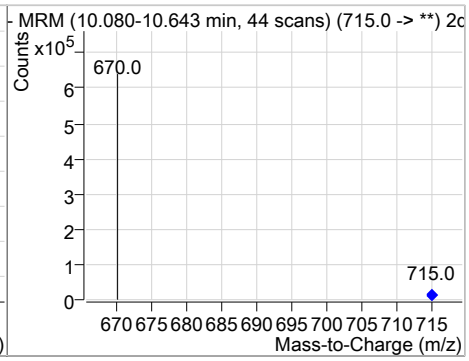




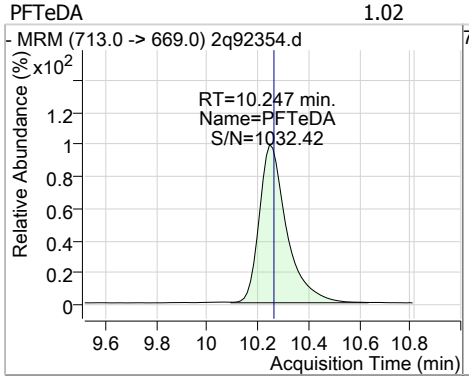
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.24	10.26	0.05	478839				

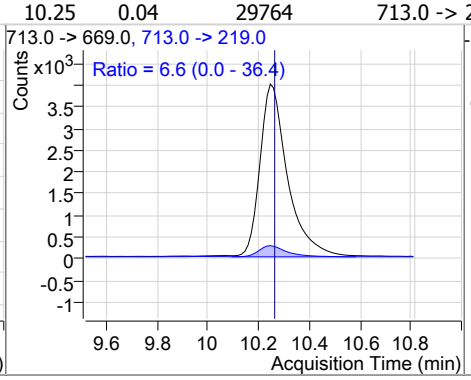


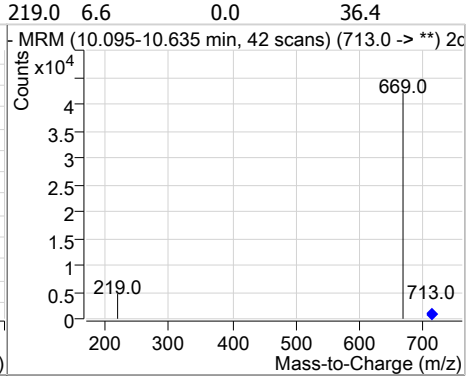




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.02	10.25	0.04	29764	713.0 -> 219.0	6.6	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1294-CC1287
Lab FileID: 2Q92354.D
Injection Time: 06/03/22 15:39
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/04/22 10:57 James Boone
Supervisor approved: 06/05/22 18:16 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.24	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:51

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92720.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/8/2022 11:09:52 AM
Sample Name : cc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91255,S2Q1298,250,,,1.0,1,water

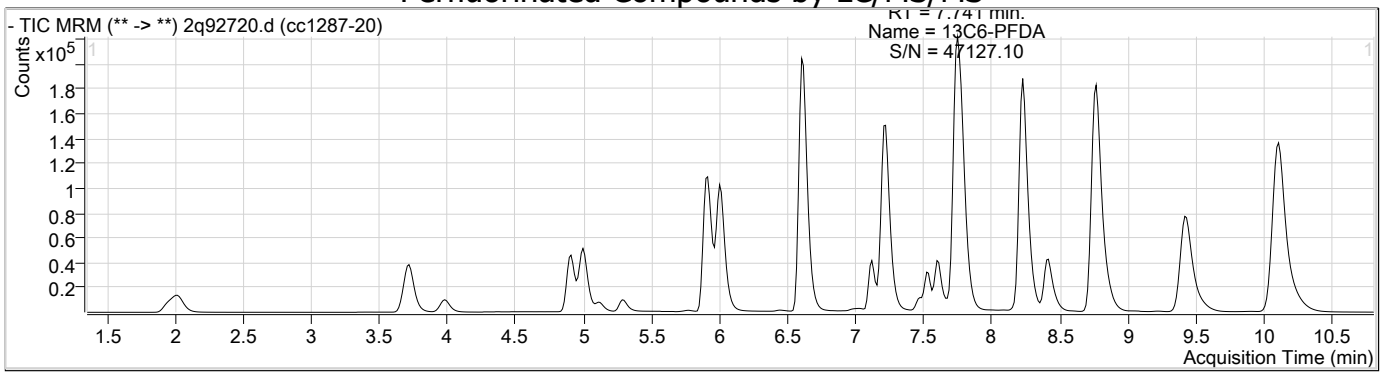
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	56840	20.00	µg/L	-0.025
M4-PFBA	2.014	217.0 -> 172.0	77983	20.00	µg/L	0.000
M5-PFPeA	3.724	268.0 -> 223.0	88481	20.00	µg/L	-0.013
M5-PFHxA	5.002	318.0 -> 273.0	128483	20.00	µg/L	-0.025
M4-PFHpA	5.904	367.0 -> 322.0	184535	20.00	µg/L	-0.025
M8-PFOA	6.624	421.0 -> 376.0	245791	20.00	µg/L	-0.025
M9-PFNA	7.227	472.0 -> 427.0	284005	20.00	µg/L	-0.025
M6-PFDA	7.741	519.0 -> 474.0	360714	20.00	µg/L	-0.038
M7-PFUnDA	8.231	570.0 -> 525.0	451458	20.00	µg/L	-0.038
M2-PFDoDA	8.768	615.0 -> 570.0	528201	20.00	µg/L	-0.050
M2-PFTeDA	10.105	715.0 -> 670.0	464436	20.00	µg/L	-0.100
M8-FOSA	7.124	506.0 -> 78.0	76198	20.00	µg/L	-0.025
M3-PFBS	3.979	302.0 -> 99.0	10193	20.00	µg/L	-0.025
M3-PFHxS	5.936	402.0 -> 99.0	14476	20.00	µg/L	-0.031
M8-PFOS	7.200	507.0 -> 99.0	21286	20.00	µg/L	-0.025
M2-4:2FTS	4.909	329.0 -> 81.0	9283	20.00	µg/L	-0.025
M2-6:2FTS	6.608	429.0 -> 81.0	20212	20.00	µg/L	-0.025
M2-8:2FTS	7.791	529.0 -> 81.0	29033	20.00	µg/L	-0.025
M3-MeFOSAA	7.598	573.0 -> 419.0	72805	20.00	µg/L	-0.025
M3-HFPO-DA	5.294	287.0 -> 169.0	5445	20.00	µg/L	-0.025
M3-MeFOSA	7.527	515.0 -> 169.0	27301	20.00	µg/L	-0.026
System Monitoring Compounds						
13C2-4:2FTS	4.909	329.0 -> 81.0	9283	19.95	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C2-6:2FTS	6.608	429.0 -> 81.0	20212	19.54	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-8:2FTS	7.791	529.0 -> 81.0	29033	19.61	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C2-PFDoDA	8.768	615.0 -> 570.0	528201	19.55	µg/L	-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
13C2-PFTeDA	10.105	715.0 -> 670.0	464436	18.66	µg/L	-0.100
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C3-PFBS	3.979	302.0 -> 99.0	10193	20.04	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C3-PFHxS	5.936	402.0 -> 99.0	14476	20.31	µg/L	-0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C4-PFBA	2.014	217.0 -> 172.0	77983	20.18	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C4-PFHpA	5.904	367.0 -> 322.0	184535	19.88	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
d5-EtFOSAA	7.735	589.0 -> 419.0	56840	18.73	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%		
13C5-PFHxA	5.002	318.0 -> 273.0	128483	19.03	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%		
13C5-PFPeA	3.724	268.0 -> 223.0	88481	19.41	µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

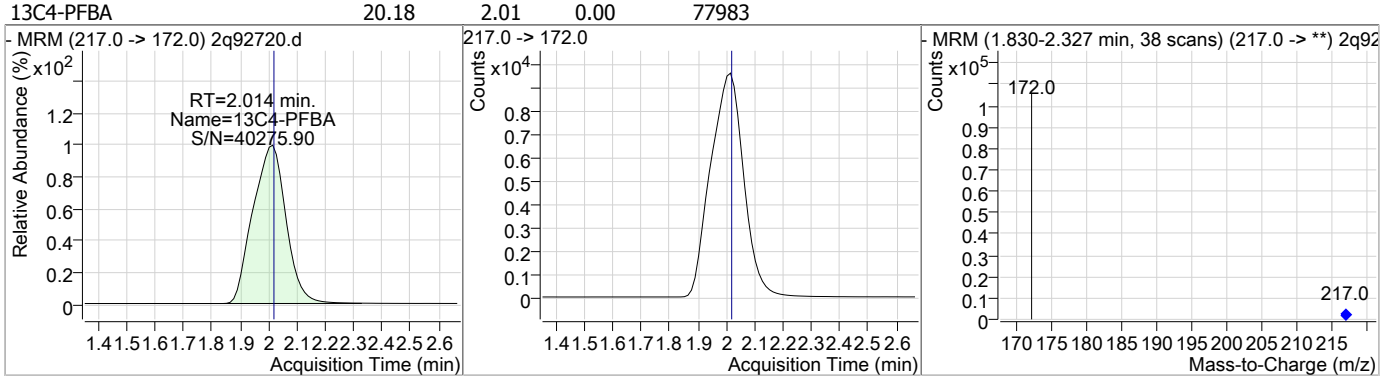
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%			
13C6-PFDA	7.741	519.0 -> 474.0	360714	19.80	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%			
13C7-PFUnDA	8.231	570.0 -> 525.0	451458	19.95	µg/L		-0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%			
13C8-FOSA	7.124	506.0 -> 78.0	76198	20.70	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%			
13C8-PFOA	6.624	421.0 -> 376.0	245791	19.09	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.5%			
13C8-PFOS	7.200	507.0 -> 99.0	21286	20.51	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%			
13C9-PFNA	7.227	472.0 -> 427.0	284005	19.47	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%			
d3-MeFOSAA	7.598	573.0 -> 419.0	72805	18.98	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.9%			
13C3-HFPO-DA	5.294	287.0 -> 169.0	5445	20.91	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%			
d3-MeFOSA	7.527	515.0 -> 169.0	27301	19.51	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%			
Target Compounds							**QValue**
4:2FTS	4.912	327.0 -> 307.0	82445	16.95	µg/L		97
6:2FTS	6.610	427.0 -> 407.0	132092	17.73	µg/L		100
8:2FTS	7.791	527.0 -> 507.0	124986	18.07	µg/L		99
EtFOSAA	7.748	584.0 -> 419.0	48073	16.98	µg/L	m	98
FOSA	7.125	498.0 -> 78.0	68310	17.07	µg/L		98
MeFOSAA	7.611	570.0 -> 419.0	57672	17.24	µg/L	m	98
PFBA	2.008	213.0 -> 169.0	33575	16.79	µg/L		100
PFBS	3.982	299.0 -> 80.0	29799	17.54	µg/L		100
PFDA	7.742	513.0 -> 469.0	312212	17.08	µg/L		100
PFDoDA	8.769	613.0 -> 569.0	428552	16.91	µg/L		100
PFDS	8.177	599.0 -> 80.0	13956	16.95	µg/L		100
PFHpA	5.905	363.0 -> 319.0	263592	17.47	µg/L		99
PFHpS	6.620	449.0 -> 80.0	30118	17.70	µg/L		99
PFHxA	5.003	313.0 -> 269.0	81600	17.16	µg/L		99
PFHxS	5.937	399.0 -> 80.0	31234	17.19	µg/L	m	98
PFNA	7.227	463.0 -> 419.0	283736	17.97	µg/L		99
PFNS	7.713	549.0 -> 80.0	24906	16.61	µg/L		98
PFOA	6.624	413.0 -> 369.0	235882	17.67	µg/L		100
PFOS	7.200	499.0 -> 80.0	32200	17.28	µg/L	m	99
PFPeA	3.726	263.0 -> 219.0	123056	18.06	µg/L		100
PFPeS	5.120	349.0 -> 80.0	20325	17.49	µg/L		100
PFTeDA	10.108	713.0 -> 669.0	506621	17.92	µg/L		100
PFTrDA	9.417	663.0 -> 619.0	492824	16.61	µg/L		99
PFUnDA	8.232	563.0 -> 519.0	349581	16.91	µg/L		100
11Cl-PF3OUdS	8.415	631.0 -> 451.0	151146	17.75	µg/L		99
9Cl-PF3ONS	7.474	531.0 -> 351.0	32056	16.40	µg/L		96
ADONA	6.006	377.0 -> 251.0	324916	17.59	µg/L		100
HFPO-DA	5.287	329.0 -> 169.0	33763	17.20	µg/L		99
MeFOSA	7.541	512.0 -> 219.0	20796	18.06	µg/L		98

= Qualifier out of range, m = manually integrated, + = Area summed

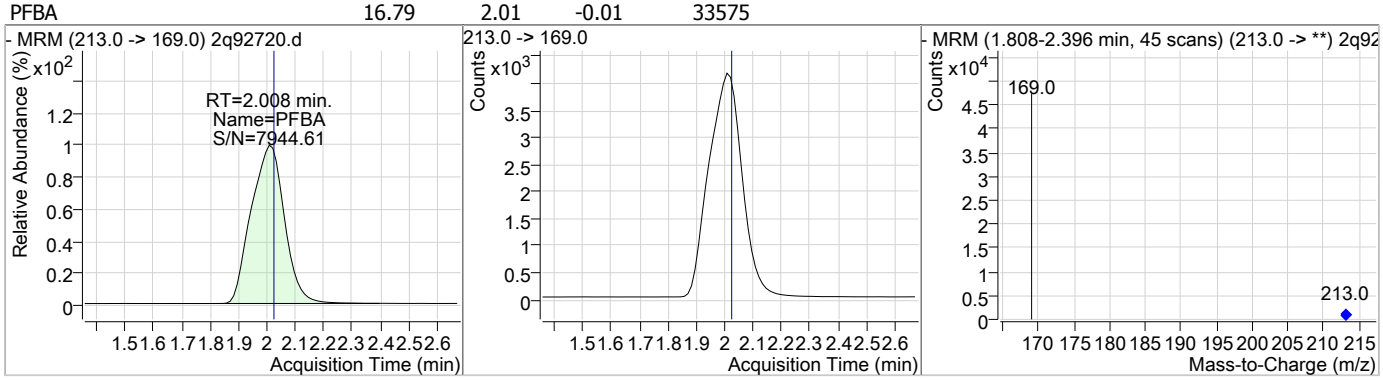
Perfluorinated Compounds by LC/MS/MS



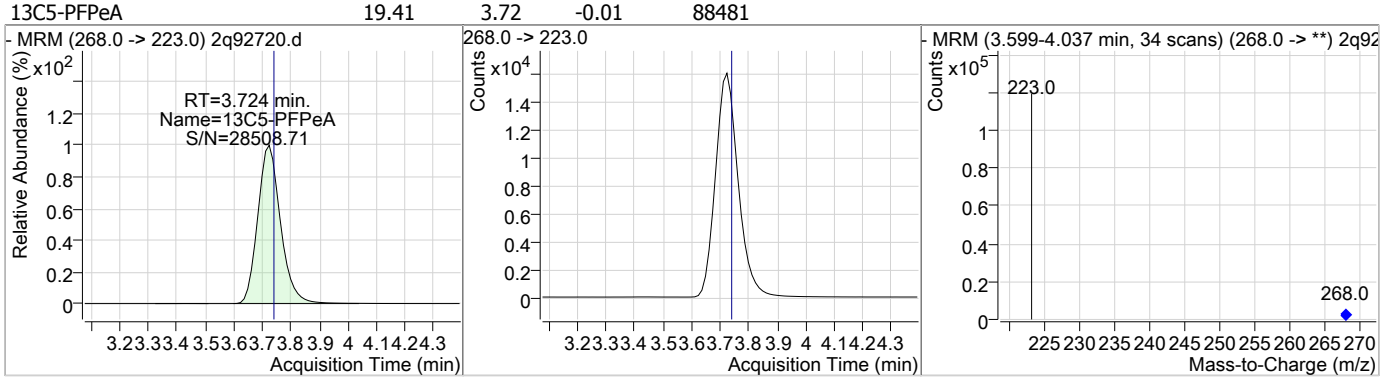
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.18	2.01	0.00	77983				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	16.79	2.01	-0.01	33575				

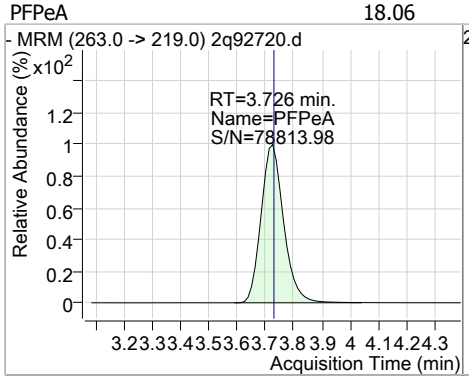


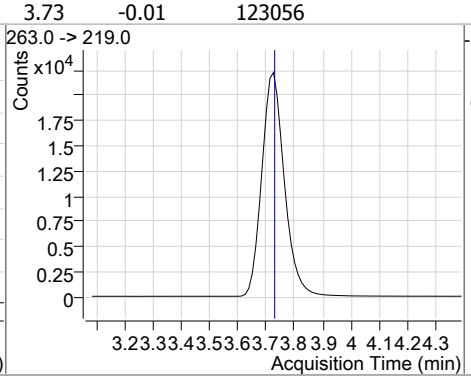
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.41	3.72	-0.01	88481				

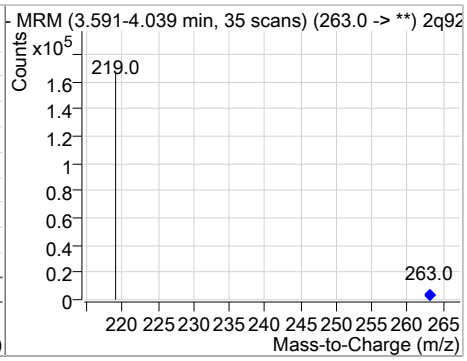


Perfluorinated Compounds by LC/MS/MS

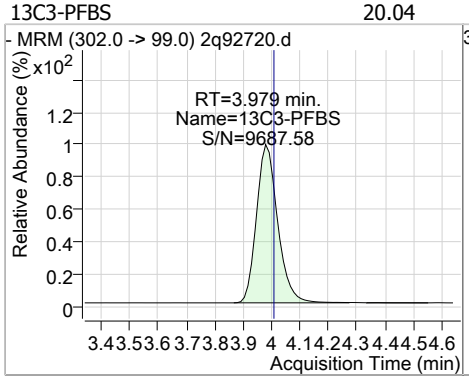
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.06	3.73	-0.01	123056				

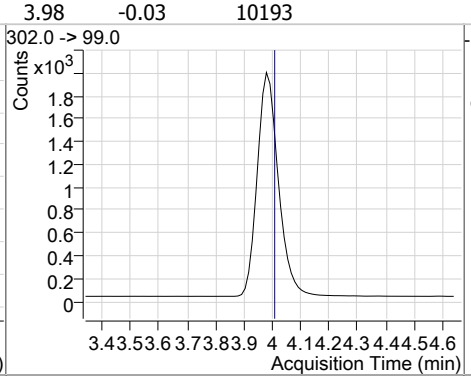


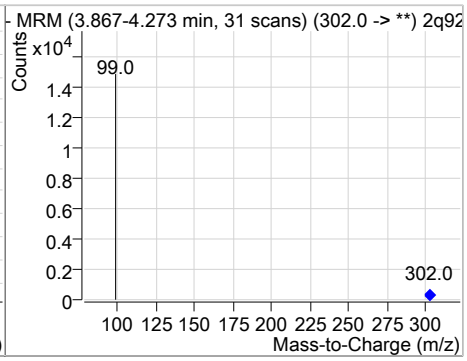




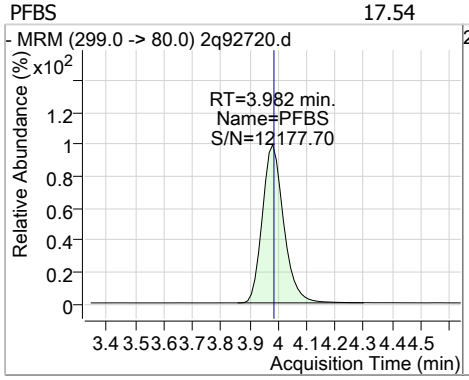
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.04	3.98	-0.03	10193				

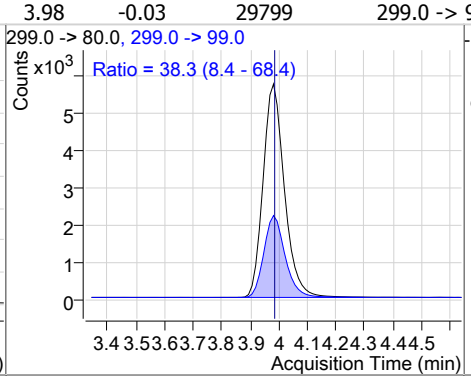


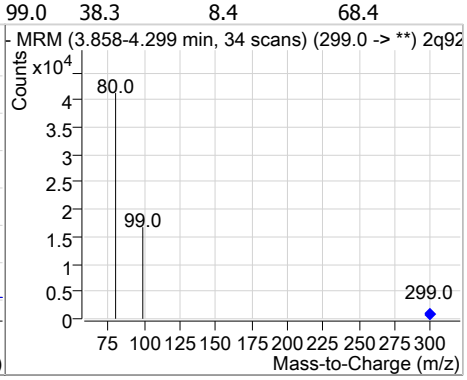




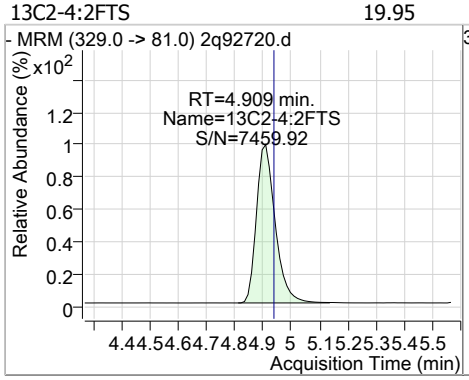
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.54	3.98	-0.03	29799	299.0 -> 99.0	38.3	8.4	68.4

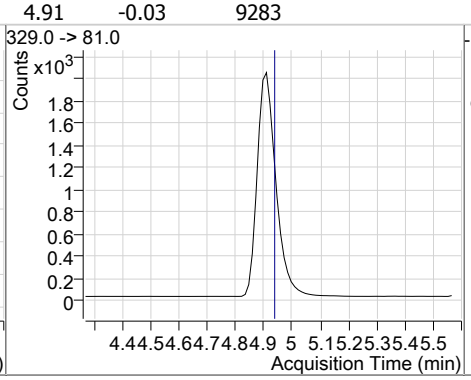


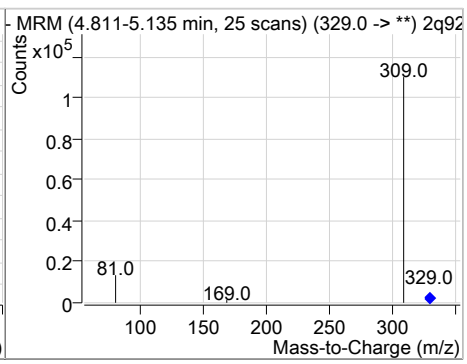




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.95	4.91	-0.03	9283				

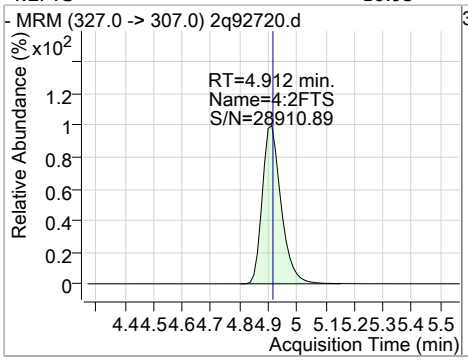


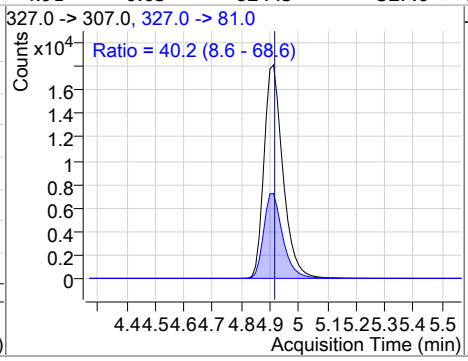


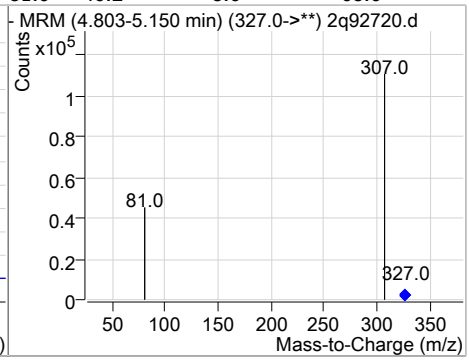


Perfluorinated Compounds by LC/MS/MS

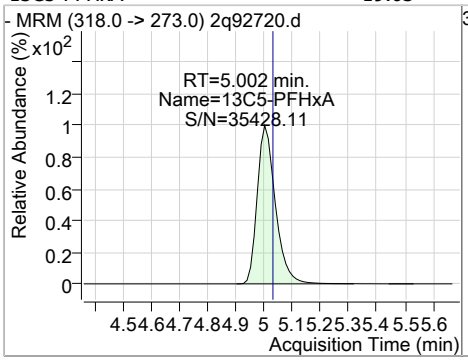
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.95	4.91	-0.03	82445	327.0 -> 81.0	40.2	8.6	68.6

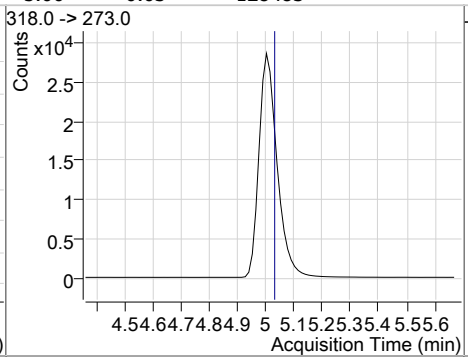


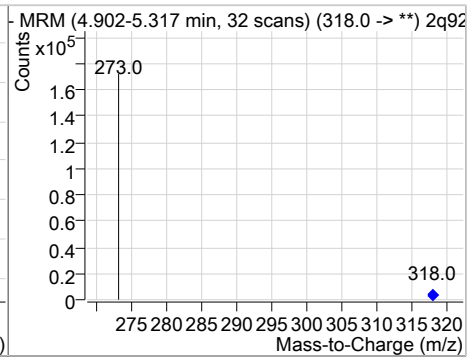




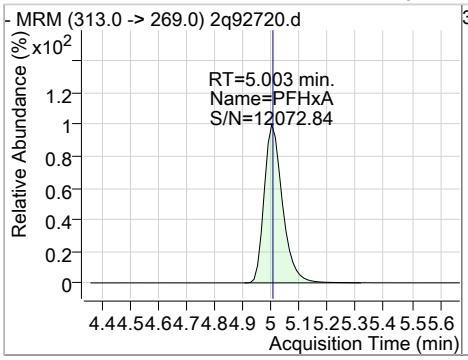
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.03	5.00	-0.03	128483				

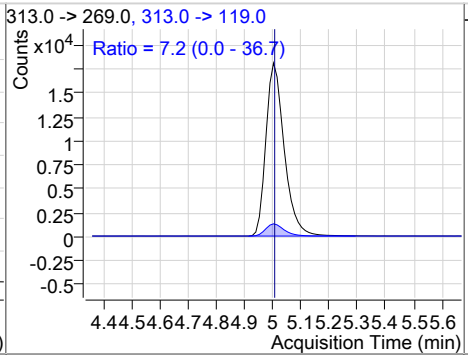


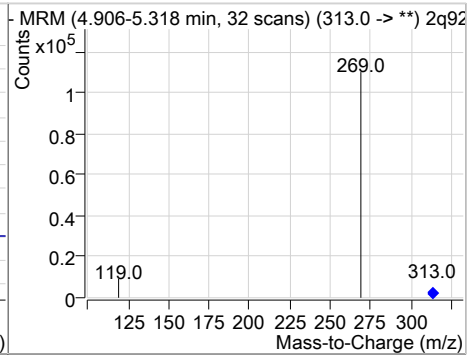




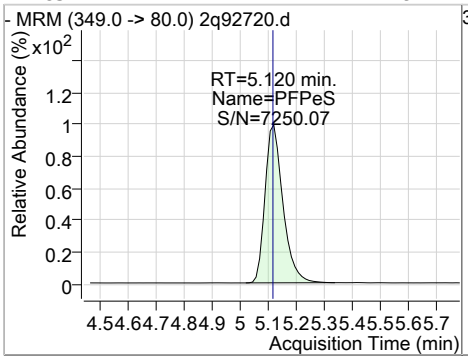
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.16	5.00	-0.03	81600	313.0 -> 119.0	7.2	0.0	36.7

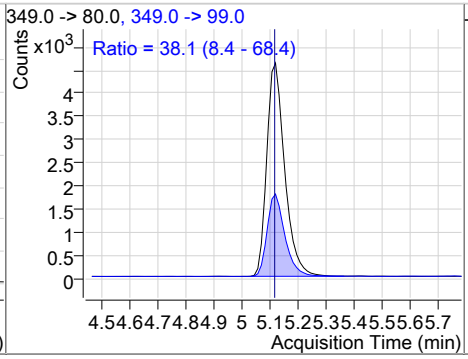


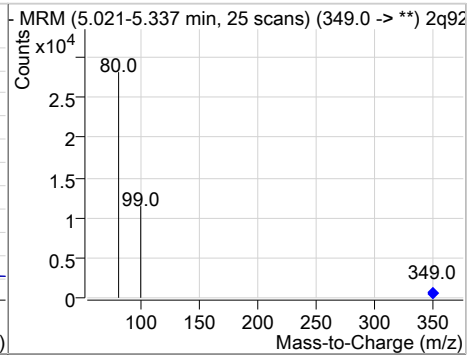




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.49	5.12	-0.03	20325	349.0 -> 99.0	38.1	8.4	68.4

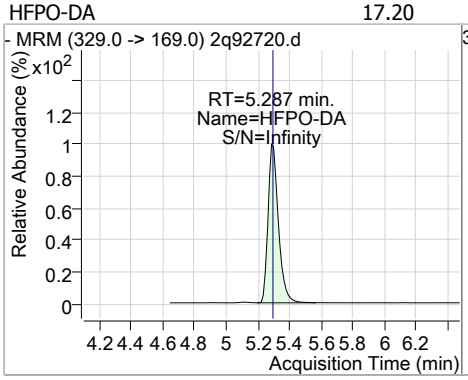


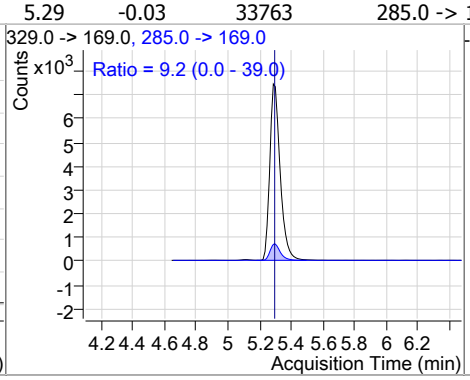


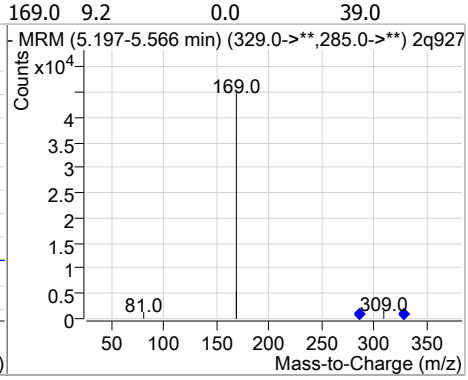


Perfluorinated Compounds by LC/MS/MS

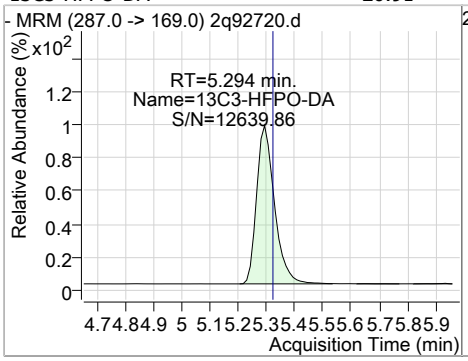
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	17.20	5.29	-0.03	33763	285.0 -> 169.0	9.2	0.0	39.0

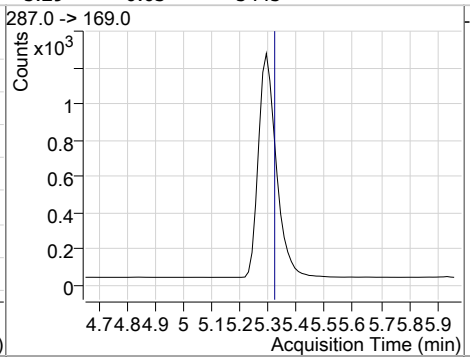


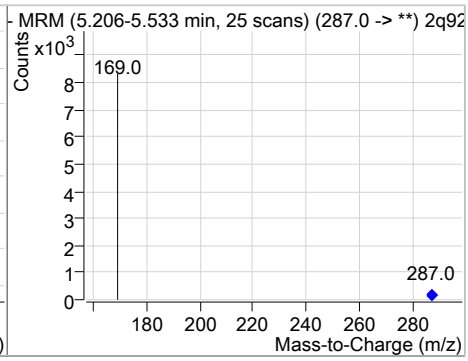




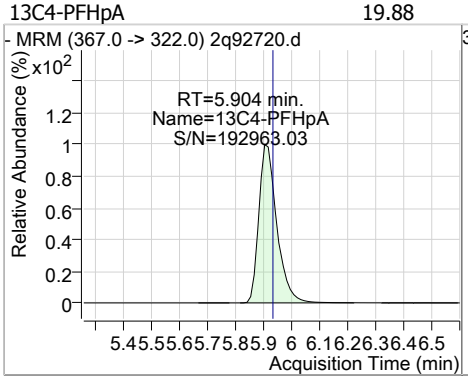
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.91	5.29	-0.03	5445				

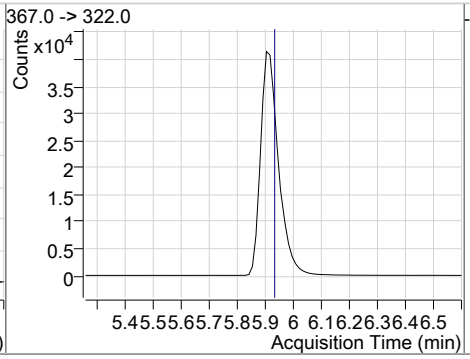


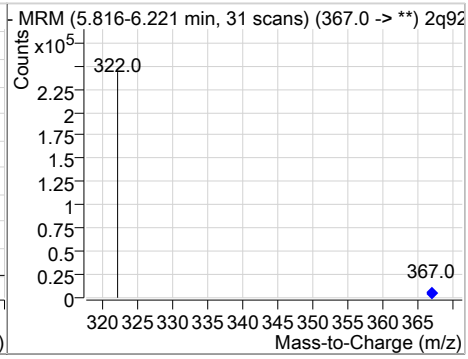




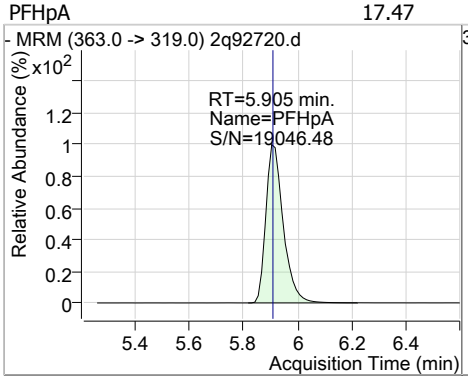
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.88	5.90	-0.03	184535				

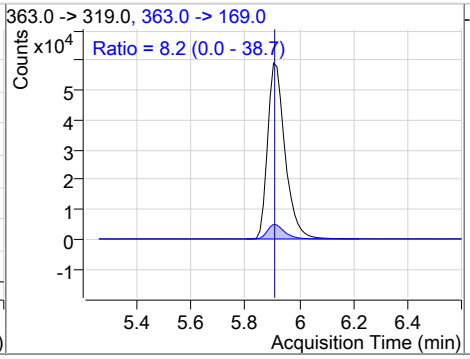


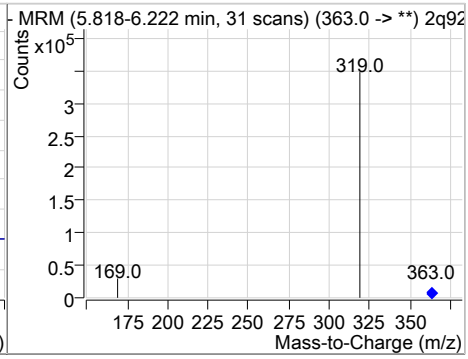




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.47	5.90	-0.03	263592	363.0 -> 169.0	8.2	0.0	38.7

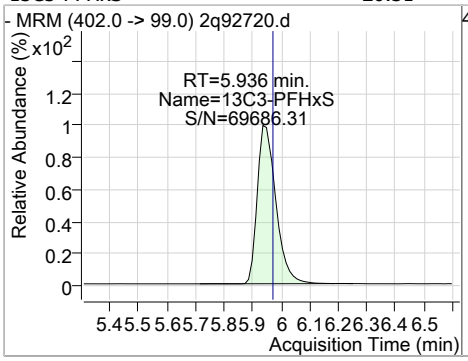


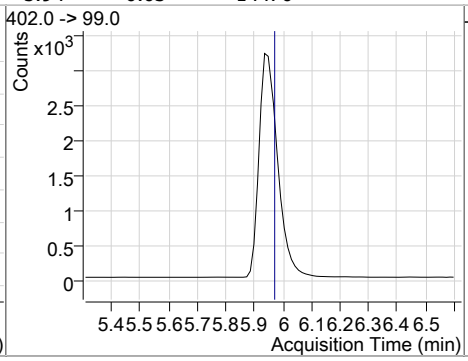


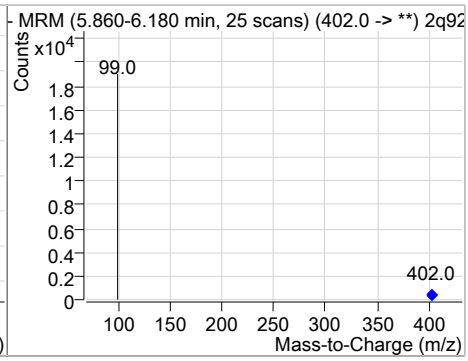


Perfluorinated Compounds by LC/MS/MS

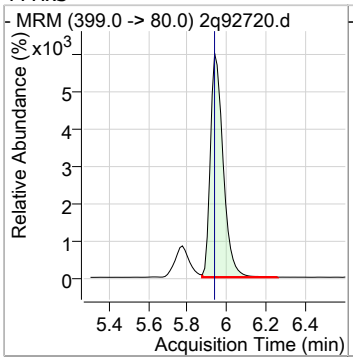
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.31	5.94	-0.03	14476				

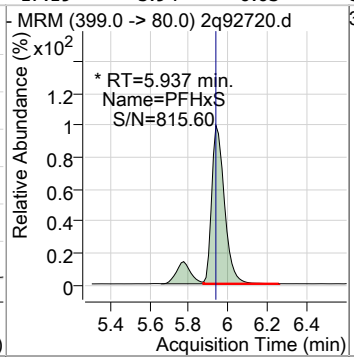


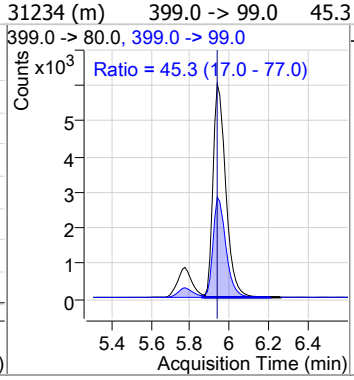


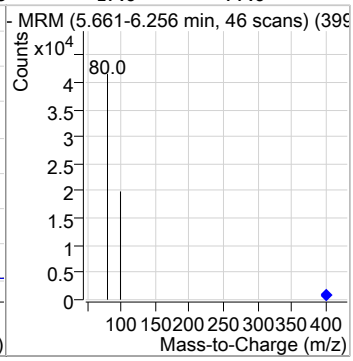


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.19	5.94	-0.03	31234 (m)	399.0 -> 99.0	45.3	17.0	77.0

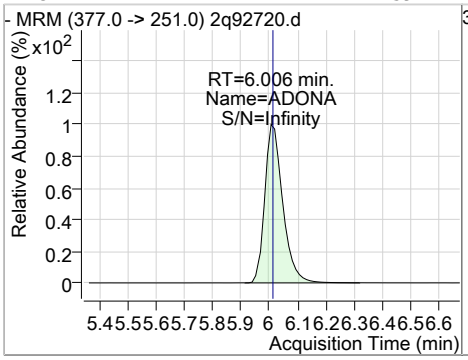


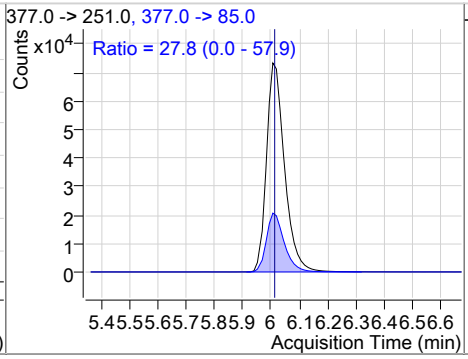


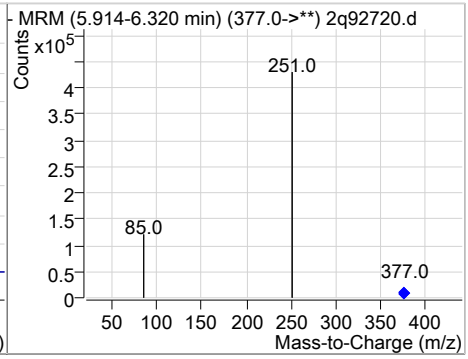




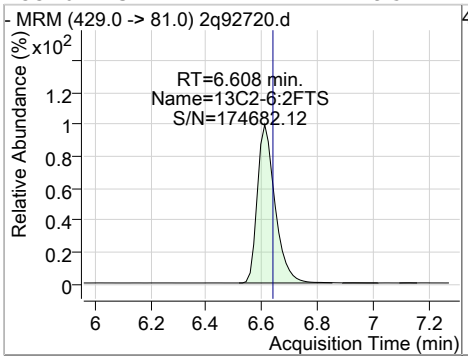
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	17.59	6.01	-0.03	324916	377.0 -> 85.0	27.8	0.0	57.9

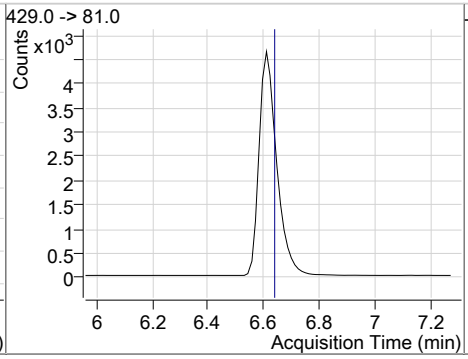


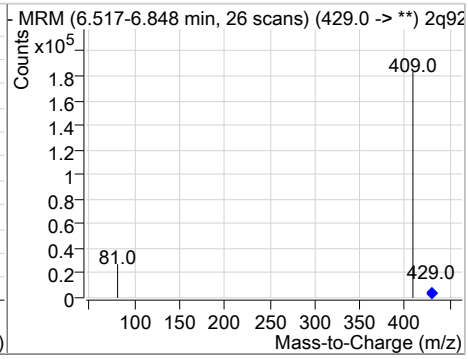




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.54	6.61	-0.03	20212				

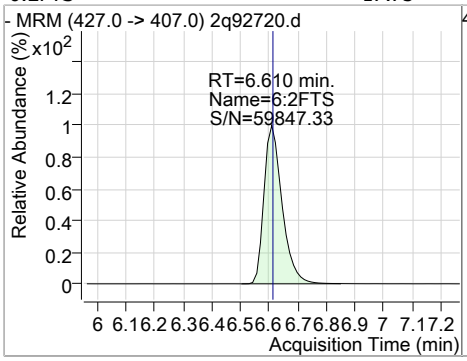


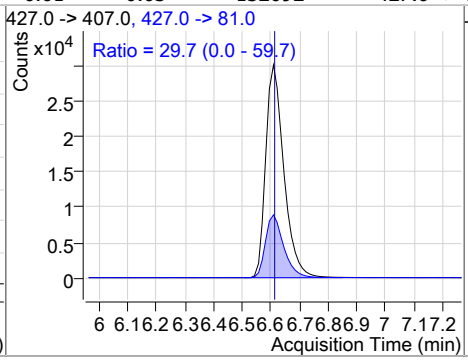


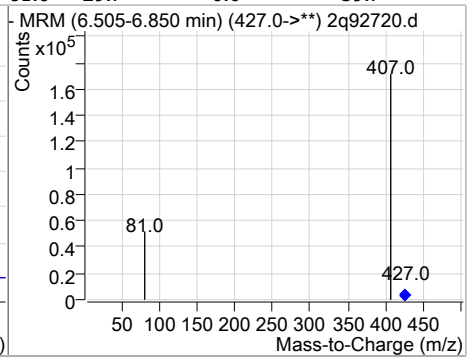


Perfluorinated Compounds by LC/MS/MS

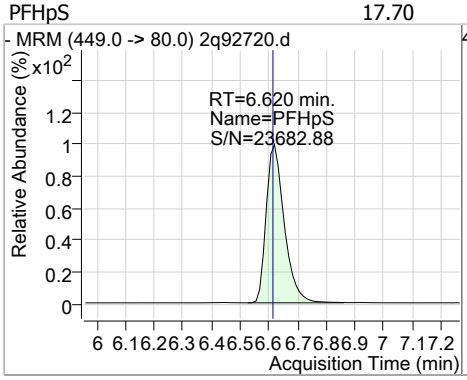
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.73	6.61	-0.03	132092	427.0 -> 81.0	29.7	0.0	59.7

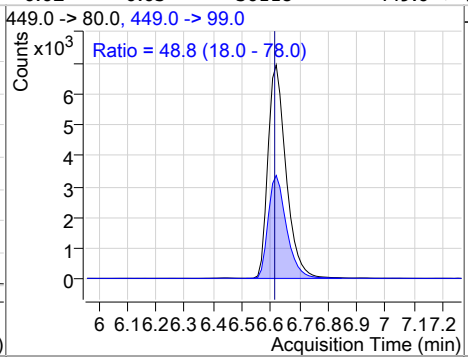


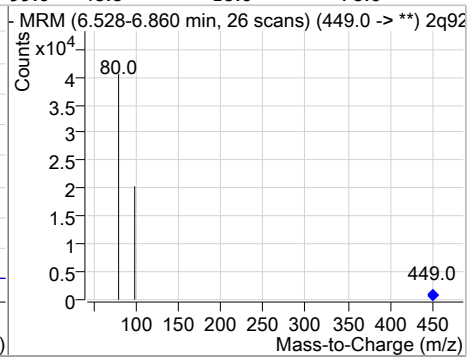




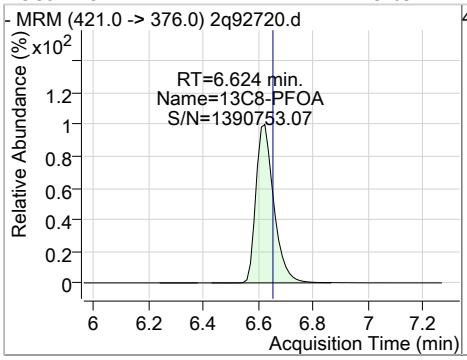
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.70	6.62	-0.03	30118	449.0 -> 99.0	48.8	18.0	78.0

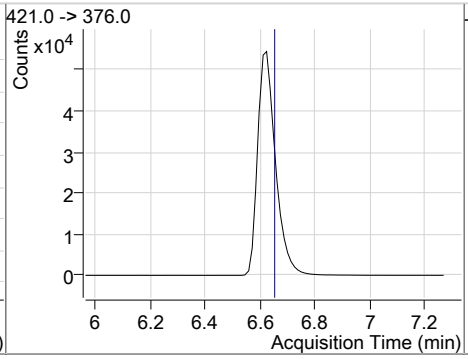


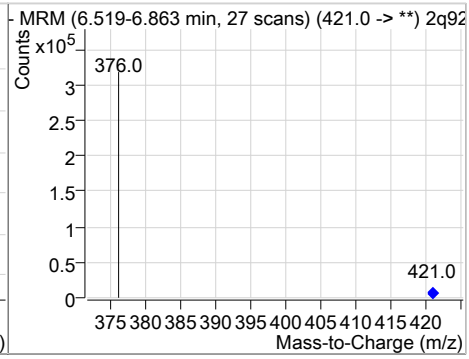




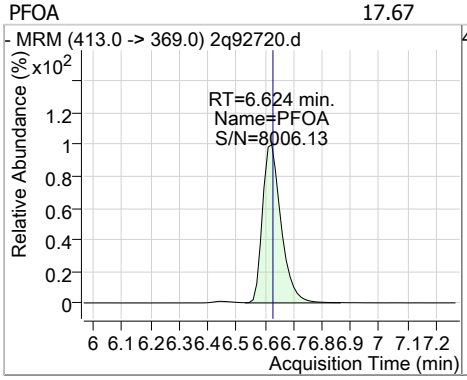
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.09	6.62	-0.03	245791				

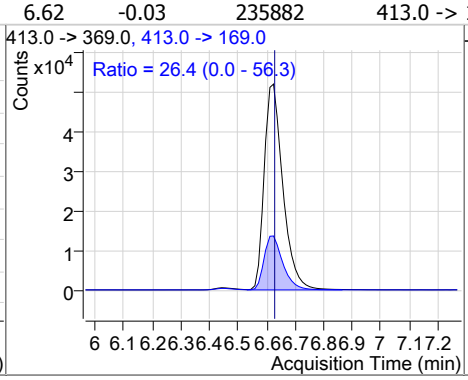


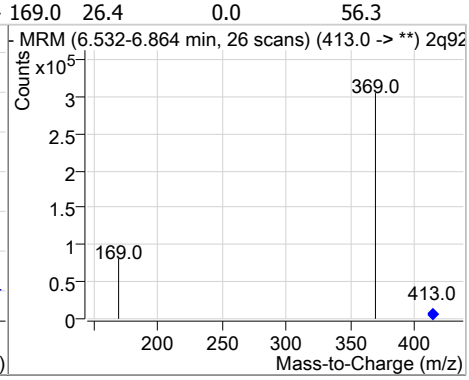




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.67	6.62	-0.03	235882	413.0 -> 169.0	26.4	0.0	56.3

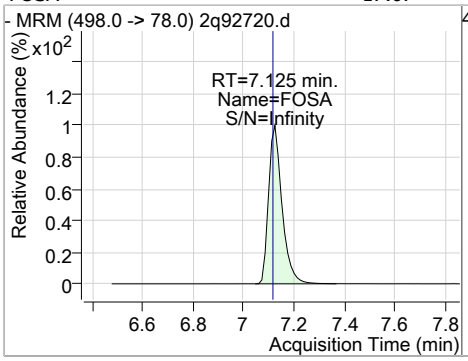


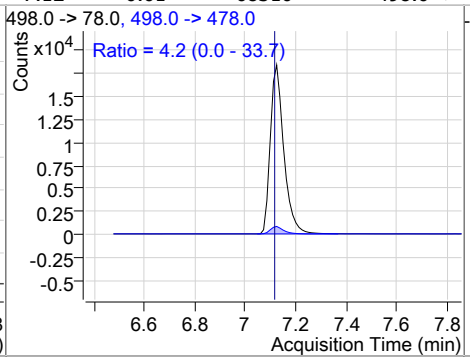


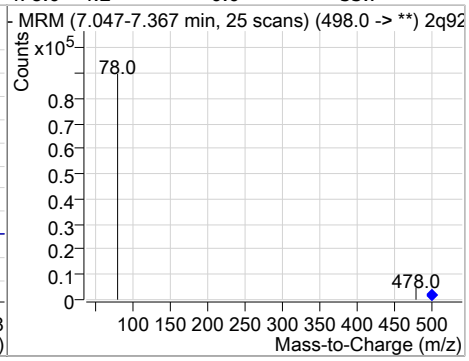


Perfluorinated Compounds by LC/MS/MS

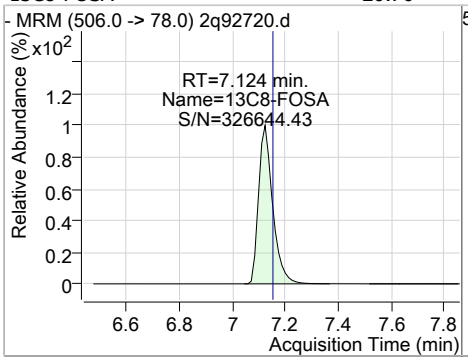
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.07	7.12	-0.01	68310	498.0 -> 478.0	4.2	0.0	33.7

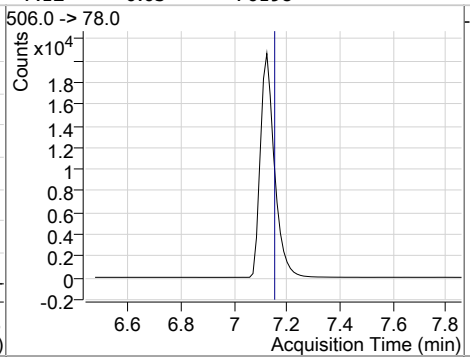


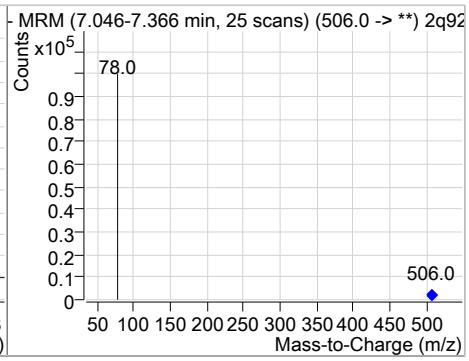




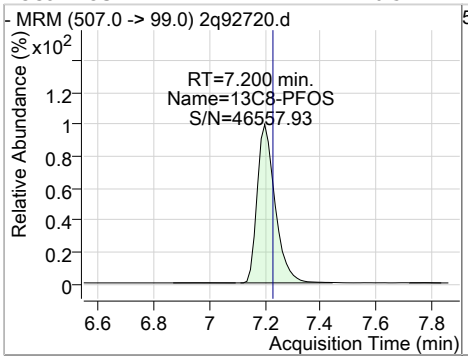
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.70	7.12	-0.03	76198				

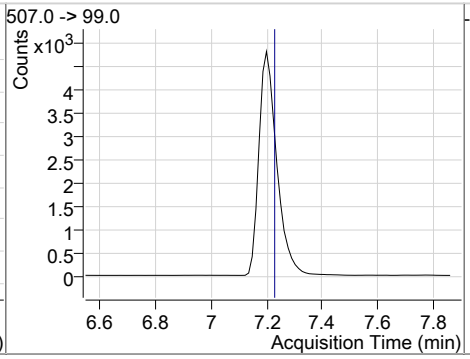


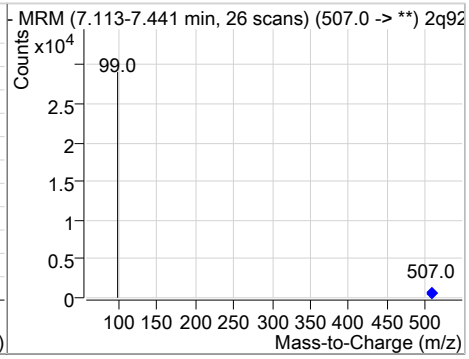




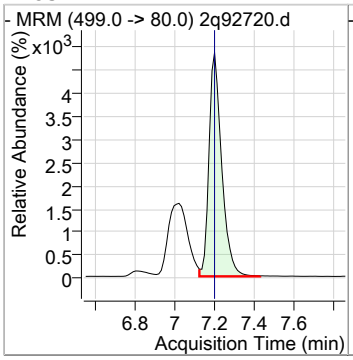
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.51	7.20	-0.03	21286				

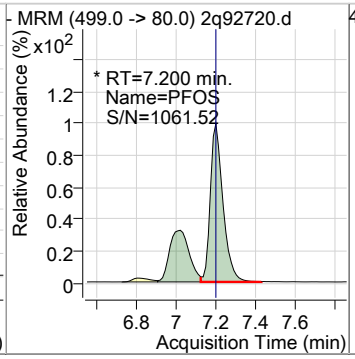


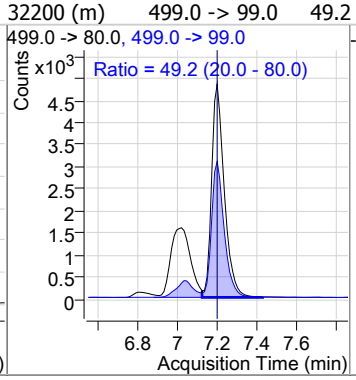


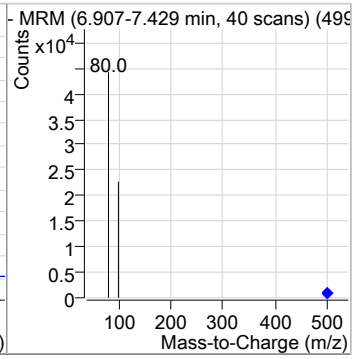


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.28	7.20	-0.03	32200 (m)	499.0 -> 99.0	49.2	20.0	80.0



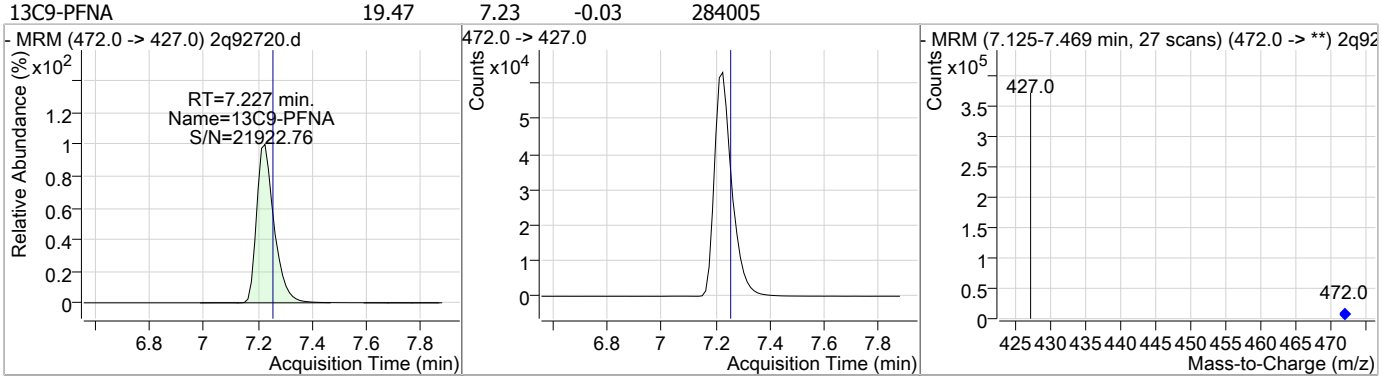




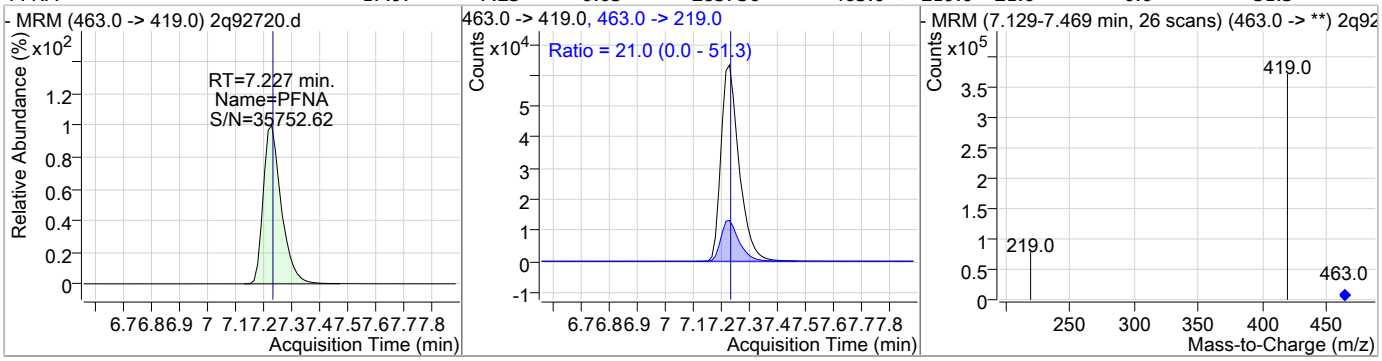


Perfluorinated Compounds by LC/MS/MS

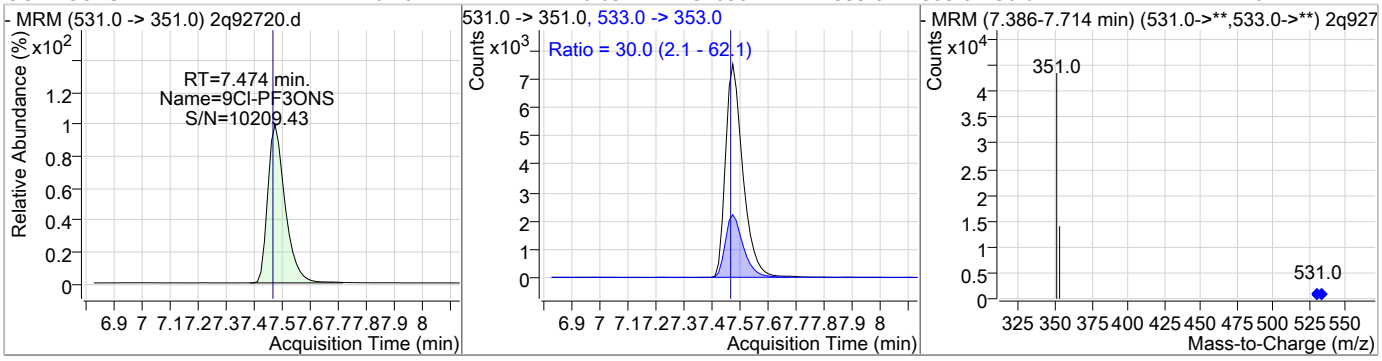
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.47	7.23	-0.03	284005				



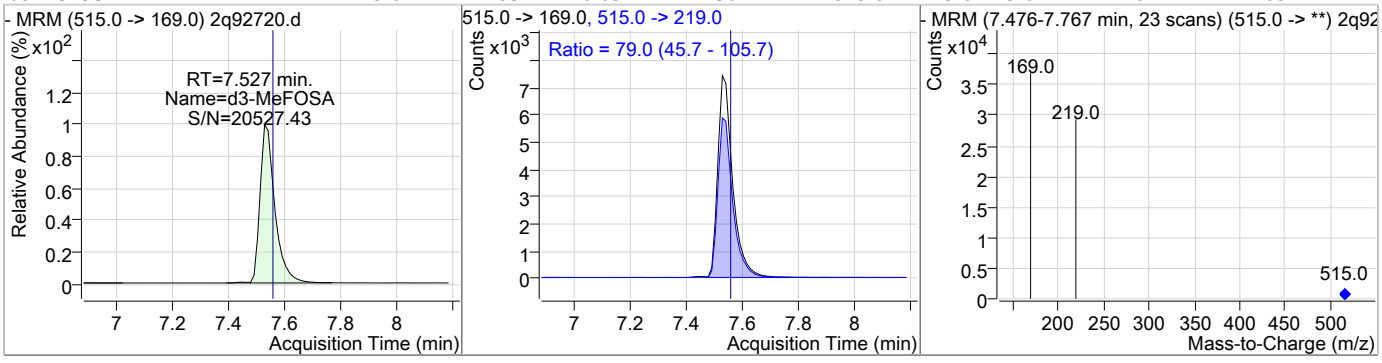
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.97	7.23	-0.03	283736	463.0 -> 219.0	21.0	0.0	51.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.40	7.47	-0.03	32056	533.0 -> 353.0	30.0	2.1	62.1

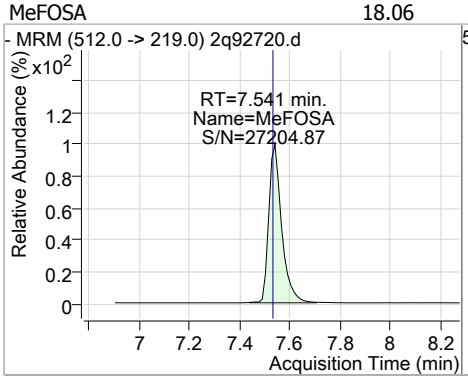


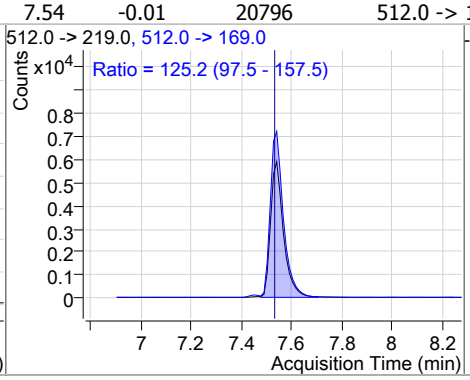
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	19.51	7.53	-0.03	27301	515.0 -> 219.0	79.0	45.7	105.7

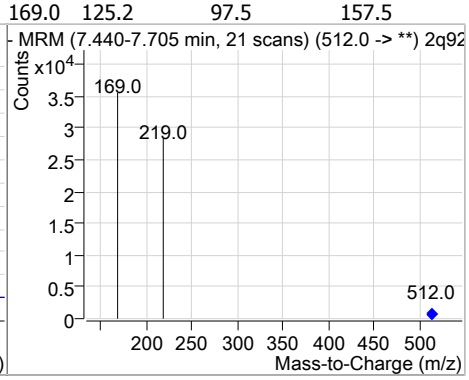


Perfluorinated Compounds by LC/MS/MS

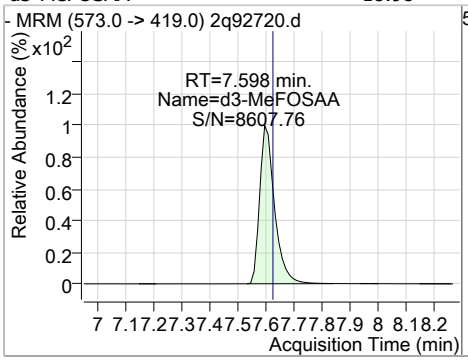
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.06	7.54	-0.01	20796	512.0 -> 169.0	125.2	97.5	157.5

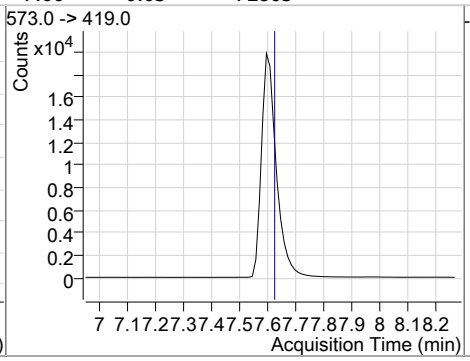


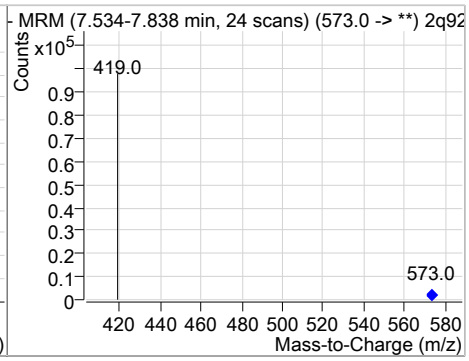




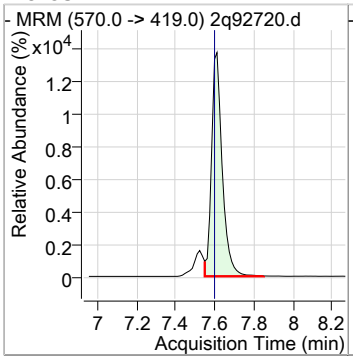
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.98	7.60	-0.03	72805				

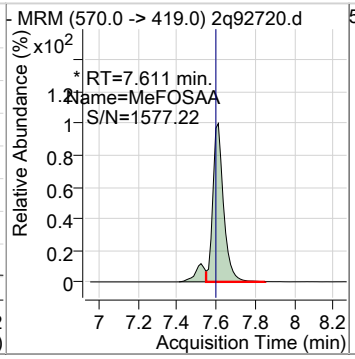


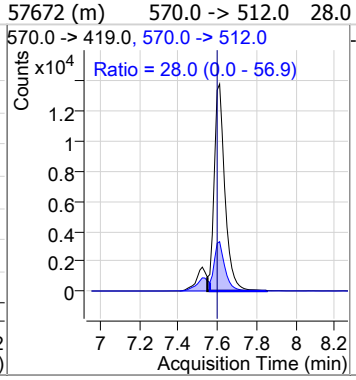


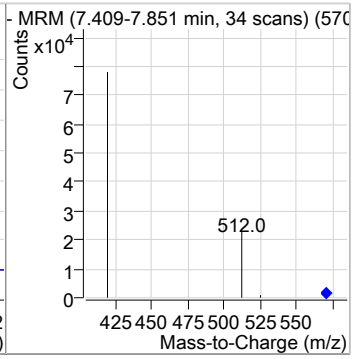


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.24	7.61	-0.01	57672 (m)	570.0 -> 512.0	28.0	0.0	56.9

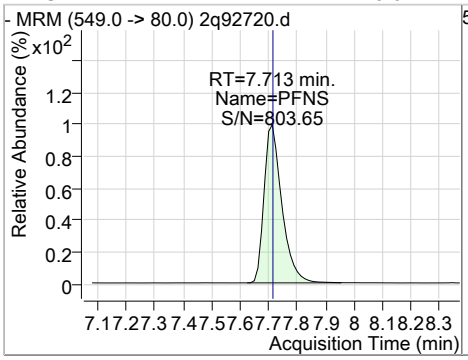


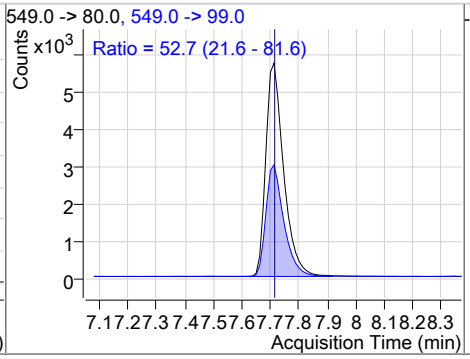


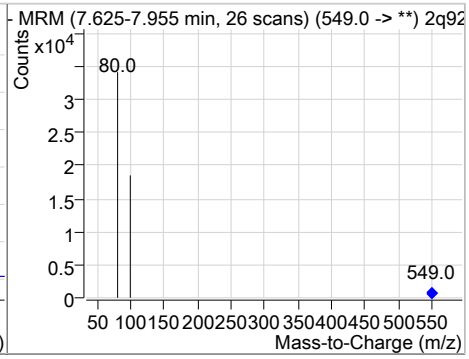




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	16.61	7.71	-0.03	24906	549.0 -> 99.0	52.7	21.6	81.6

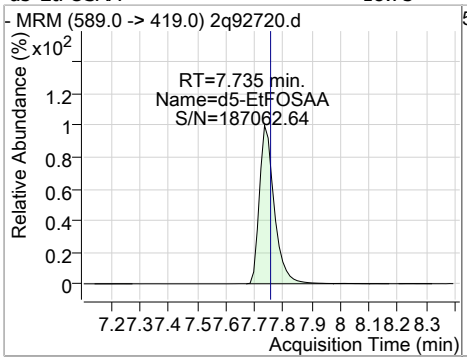


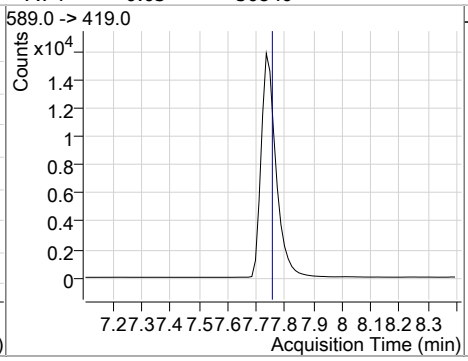


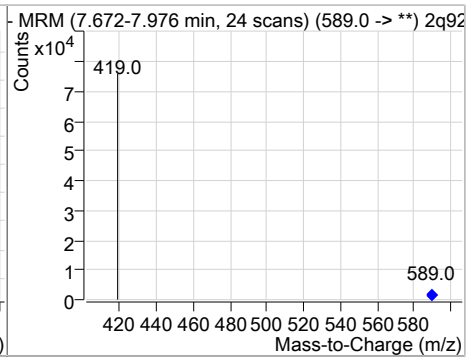


Perfluorinated Compounds by LC/MS/MS

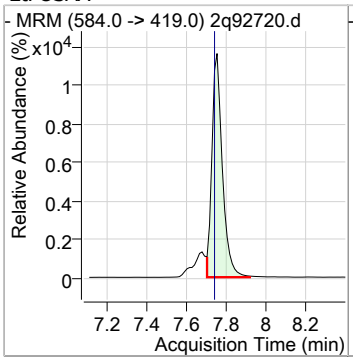
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.73	7.74	-0.03	56840				

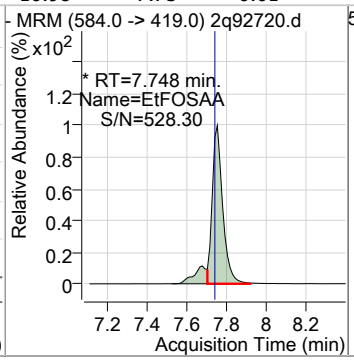


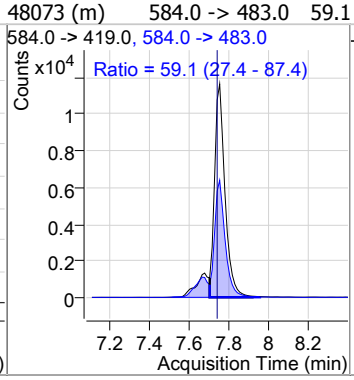


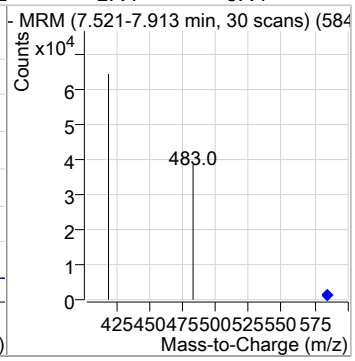


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	16.98	7.75	-0.01	48073 (m)	584.0 -> 483.0	59.1	27.4	87.4

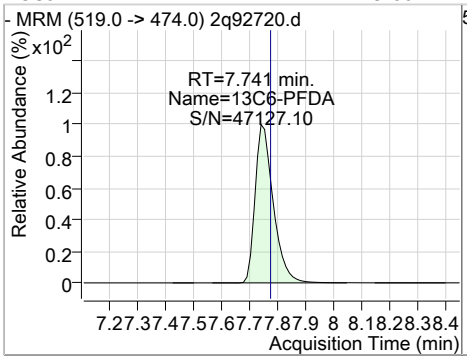


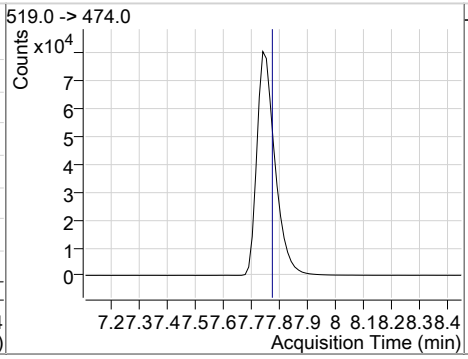


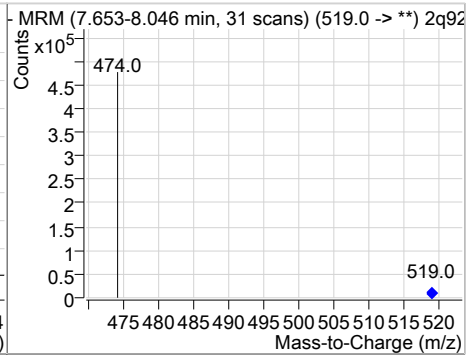




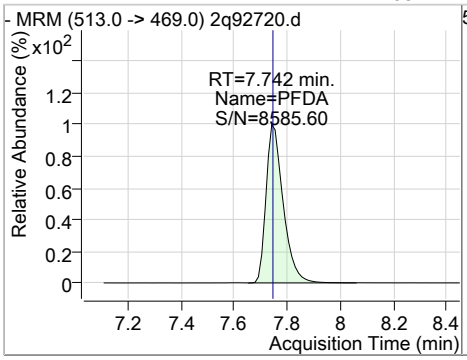
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.80	7.74	-0.04	360714				

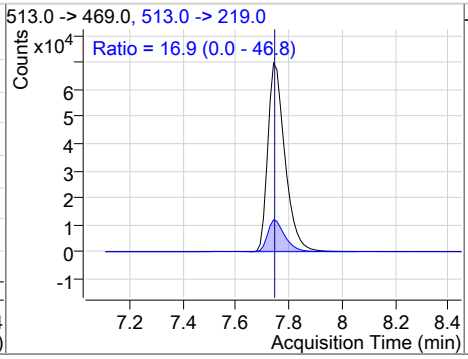


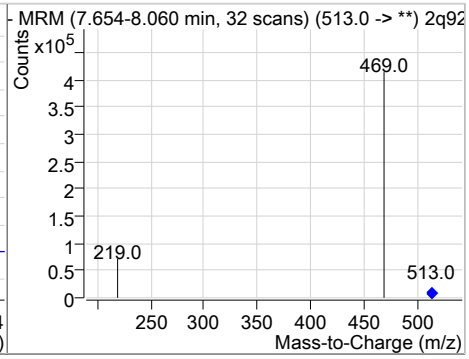




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.08	7.74	-0.04	312212	513.0 -> 219.0	16.9	0.0	46.8

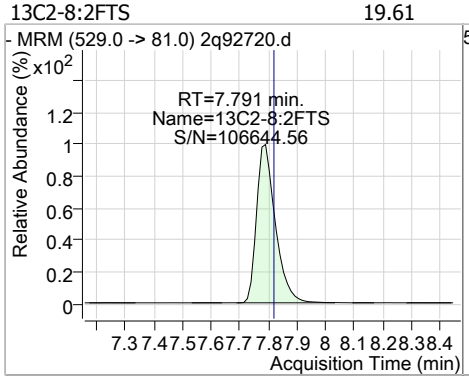


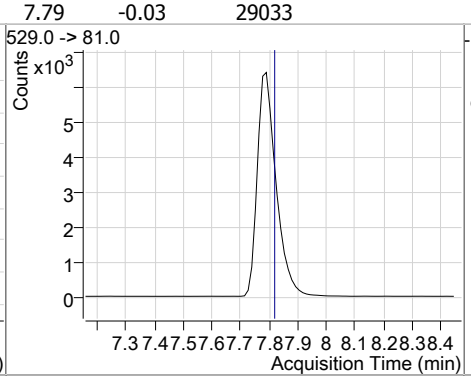


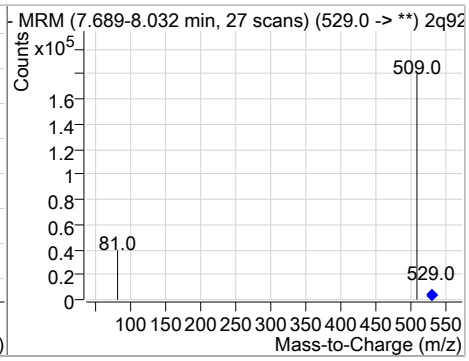


Perfluorinated Compounds by LC/MS/MS

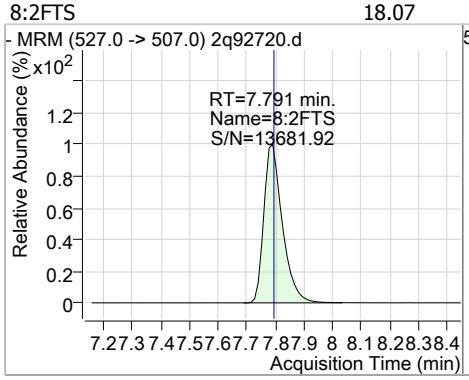
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.61	7.79	-0.03	29033				

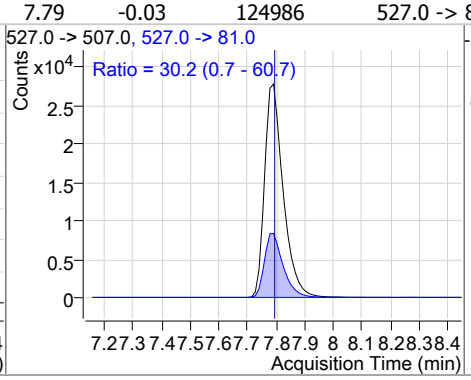


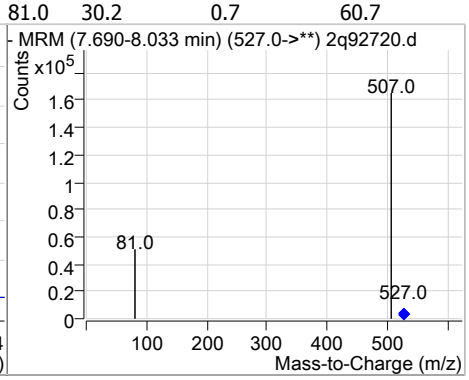




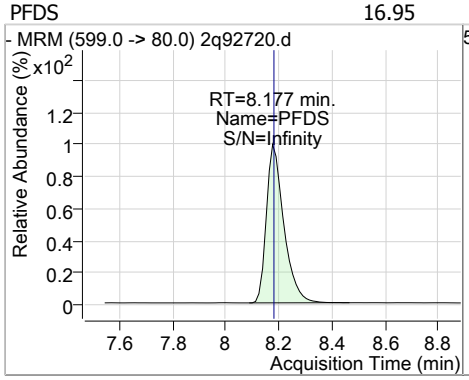
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.07	7.79	-0.03	124986	527.0 -> 81.0	30.2	0.7	60.7

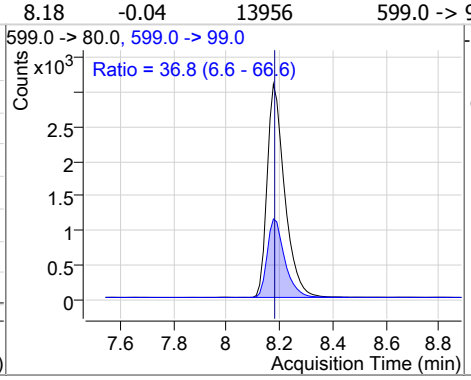


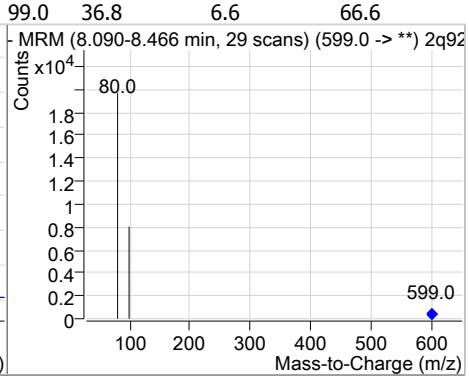




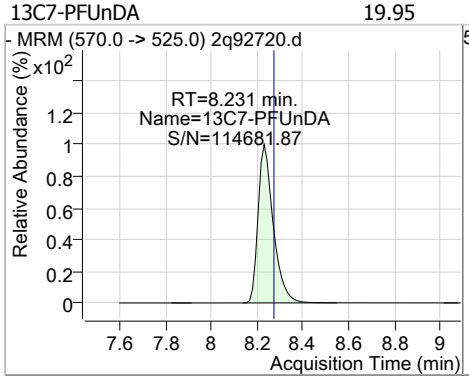
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	16.95	8.18	-0.04	13956	599.0 -> 99.0	36.8	6.6	66.6

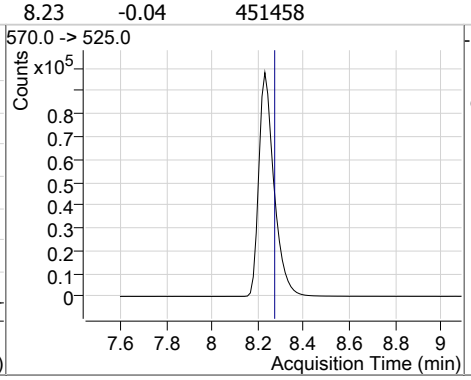


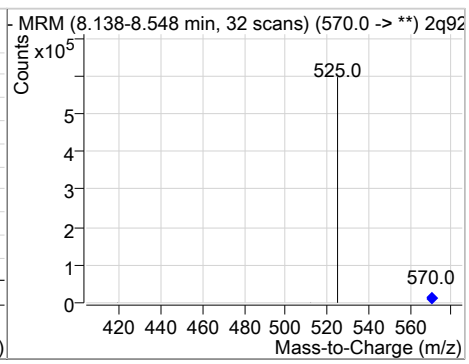




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.95	8.23	-0.04	451458				

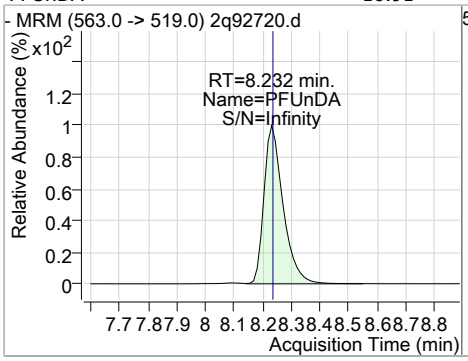


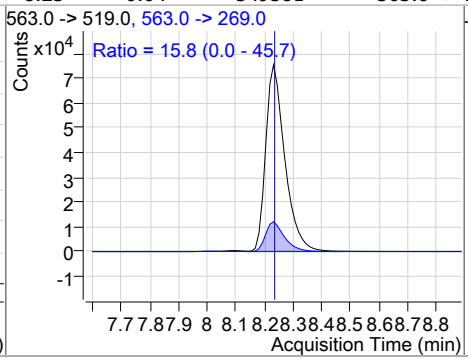


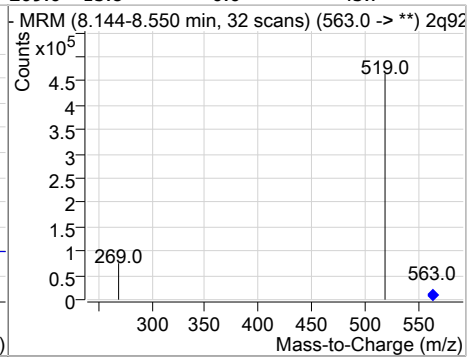


Perfluorinated Compounds by LC/MS/MS

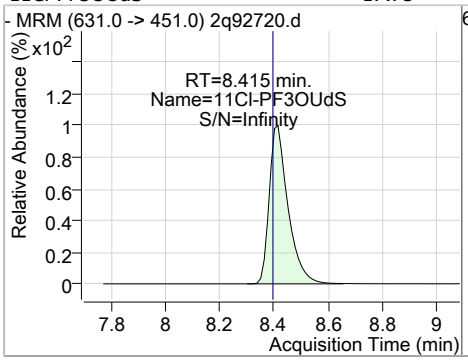
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.91	8.23	-0.04	349581	563.0 -> 269.0	15.8	0.0	45.7

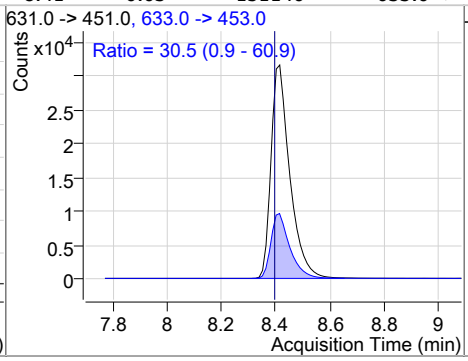


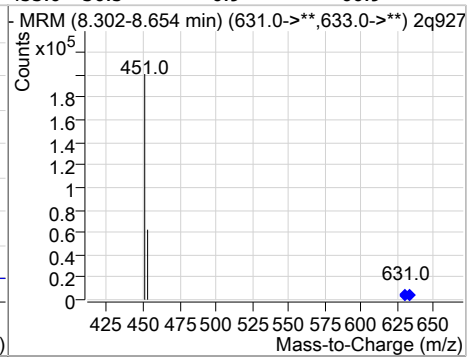




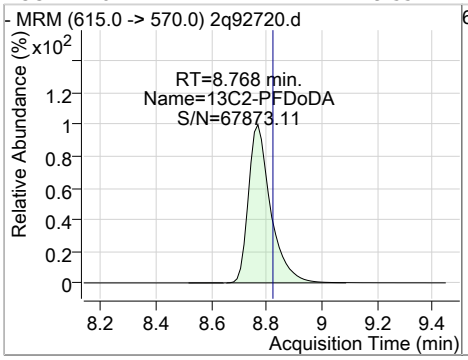
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.75	8.41	-0.03	151146	633.0 -> 453.0	30.5	0.9	60.9

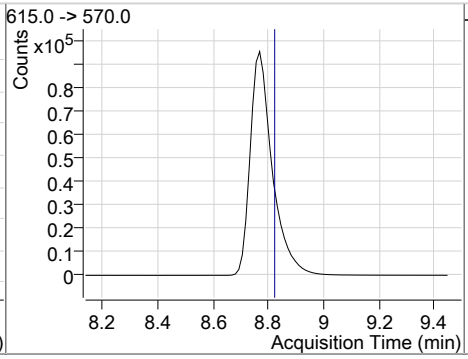


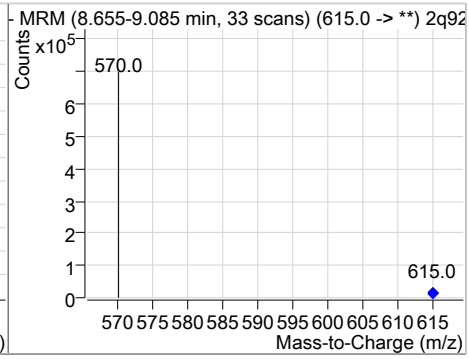




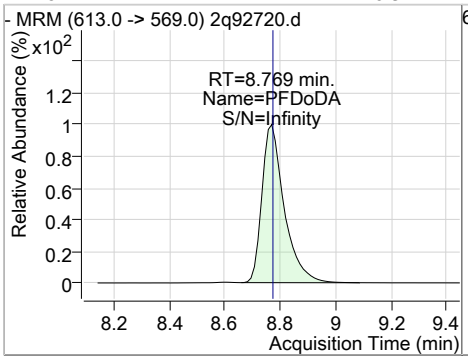
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.55	8.77	-0.05	528201				

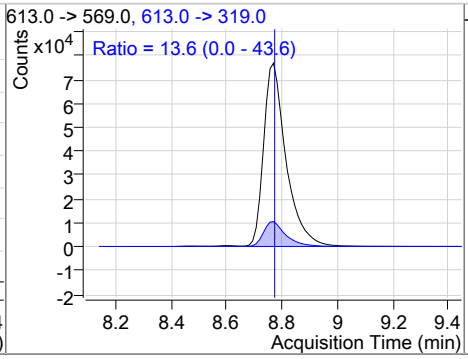


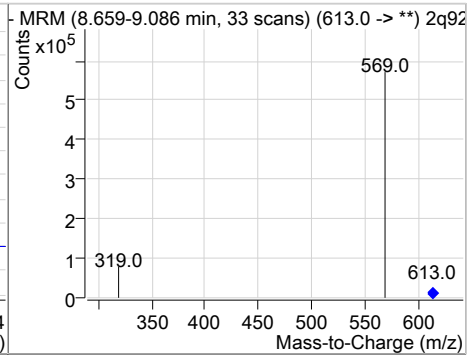




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	16.91	8.77	-0.05	428552	613.0 -> 319.0	13.6	0.0	43.6

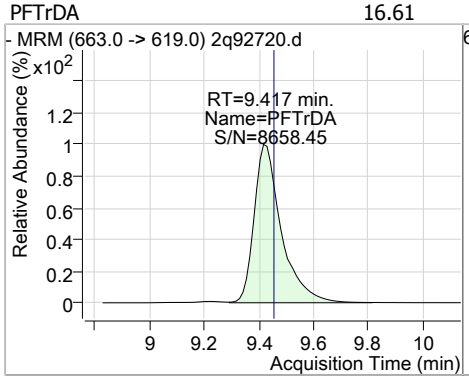


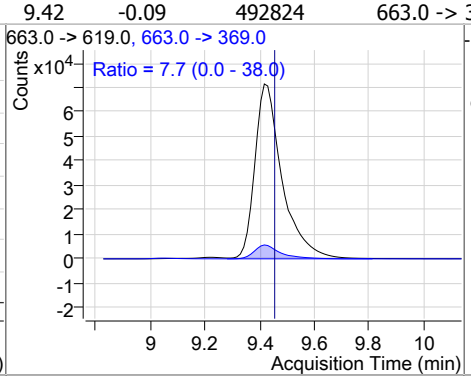


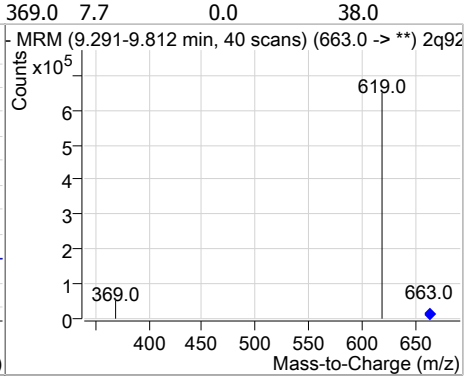


Perfluorinated Compounds by LC/MS/MS

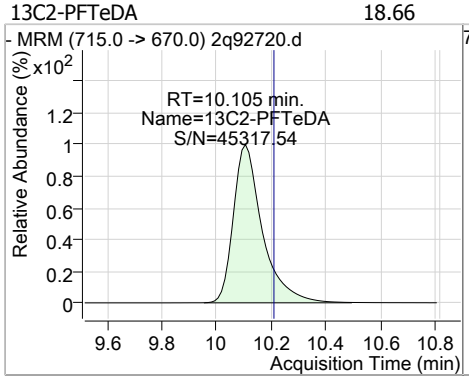
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.61	9.42	-0.09	492824	663.0 -> 369.0	7.7	0.0	38.0

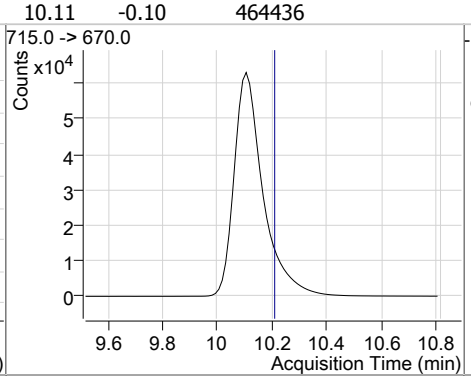


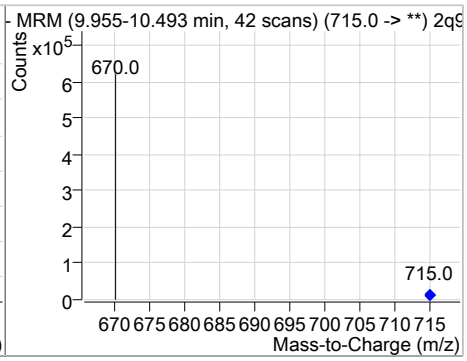




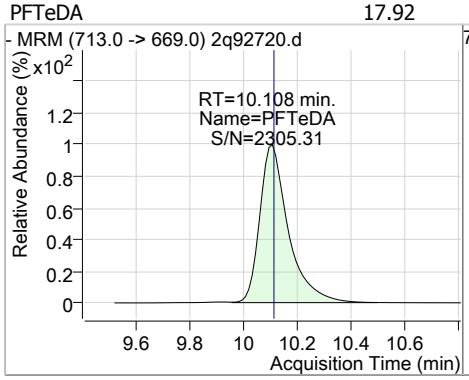
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.66	10.11	-0.10	464436				

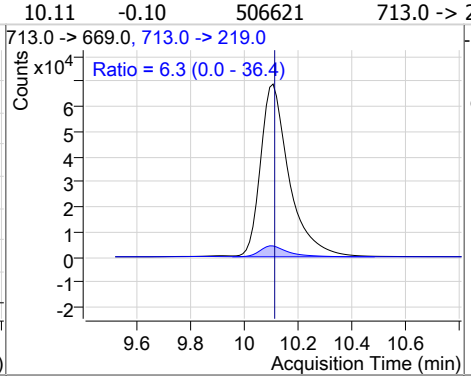


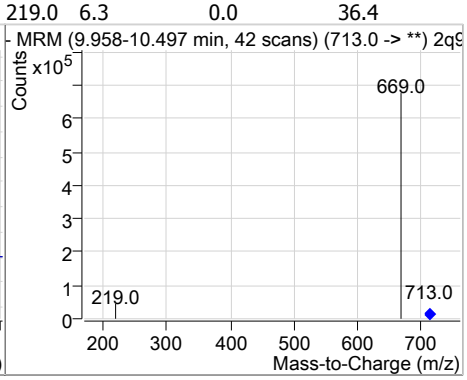




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.92	10.11	-0.10	506621	713.0 -> 219.0	6.3	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1298-CC1287
Lab FileID: 2Q92720.D
Injection Time: 06/08/22 11:09
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 13:38 Natasha Gumtie
Supervisor approved: 06/08/22 15:51 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:51

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92722.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/8/2022 11:52:24 AM
Sample Name : cc1287-1.0LL
Vial : P1-A3
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91255,S2Q1298,250,,,1.0,1,water

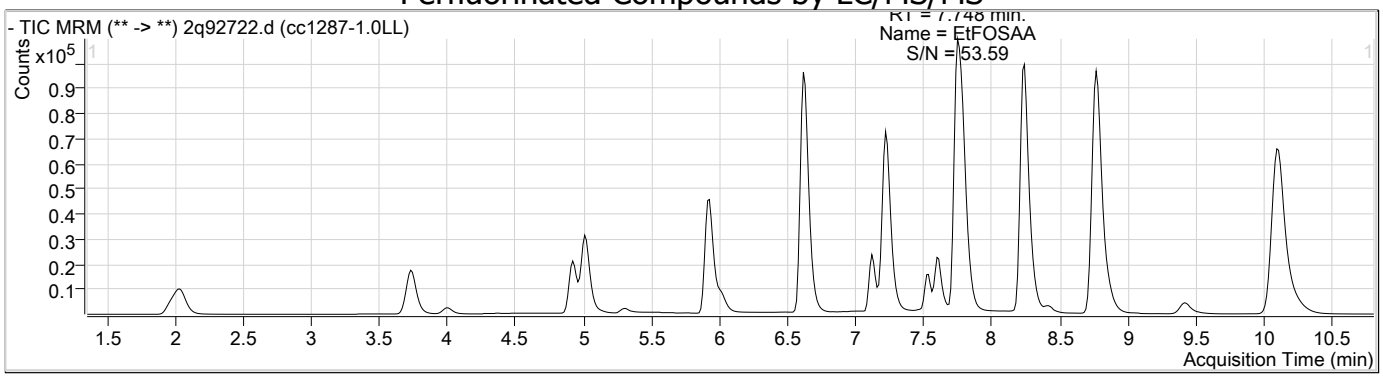
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.735	589.0 -> 419.0	56717	20.00	µg/L	-0.025
M4-PFBA	2.027	217.0 -> 172.0	76114	20.00	µg/L	0.013
M5-PFPeA	3.736	268.0 -> 223.0	86182	20.00	µg/L	0.000
M5-PFHxA	5.014	318.0 -> 273.0	127285	20.00	µg/L	-0.013
M4-PFHpA	5.916	367.0 -> 322.0	180348	20.00	µg/L	-0.013
M8-PFOA	6.624	421.0 -> 376.0	244559	20.00	µg/L	-0.025
M9-PFNA	7.227	472.0 -> 427.0	277564	20.00	µg/L	-0.025
M6-PFDA	7.754	519.0 -> 474.0	349822	20.00	µg/L	-0.026
M7-PFUnDA	8.243	570.0 -> 525.0	437702	20.00	µg/L	-0.025
M2-PFDoDA	8.768	615.0 -> 570.0	503960	20.00	µg/L	-0.050
M2-PFTeDA	10.093	715.0 -> 670.0	460289	20.00	µg/L	-0.113
M8-FOSA	7.124	506.0 -> 78.0	76180	20.00	µg/L	-0.025
M3-PFBS	3.992	302.0 -> 99.0	9985	20.00	µg/L	-0.013
M3-PFHxS	5.948	402.0 -> 99.0	14057	20.00	µg/L	-0.019
M8-PFOS	7.212	507.0 -> 99.0	20309	20.00	µg/L	-0.013
M2-4:2FTS	4.921	329.0 -> 81.0	9087	20.00	µg/L	-0.013
M2-6:2FTS	6.621	429.0 -> 81.0	20370	20.00	µg/L	-0.013
M2-8:2FTS	7.791	529.0 -> 81.0	28548	20.00	µg/L	-0.025
M3-MeFOSAA	7.598	573.0 -> 419.0	69483	20.00	µg/L	-0.025
M3-HFPO-DA	5.306	287.0 -> 169.0	5411	20.00	µg/L	-0.013
M3-MeFOSA	7.539	515.0 -> 169.0	27798	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.921	329.0 -> 81.0	9087	19.53	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-6:2FTS	6.621	429.0 -> 81.0	20370	19.70	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C2-8:2FTS	7.791	529.0 -> 81.0	28548	19.28	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%		
13C2-PFDoDA	8.768	615.0 -> 570.0	503960	18.66	µg/L	-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C2-PFTeDA	10.093	715.0 -> 670.0	460289	18.49	µg/L	-0.113
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C3-PFBS	3.992	302.0 -> 99.0	9985	19.63	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.2%		
13C3-PFHxS	5.948	402.0 -> 99.0	14057	19.72	µg/L	-0.019
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C4-PFBA	2.027	217.0 -> 172.0	76114	19.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C4-PFHpA	5.916	367.0 -> 322.0	180348	19.42	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%		
d5-EtFOSAA	7.735	589.0 -> 419.0	56717	18.69	ng/ml	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.4%		
13C5-PFHxA	5.014	318.0 -> 273.0	127285	18.85	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C5-PFPeA	3.736	268.0 -> 223.0	86182	18.91	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

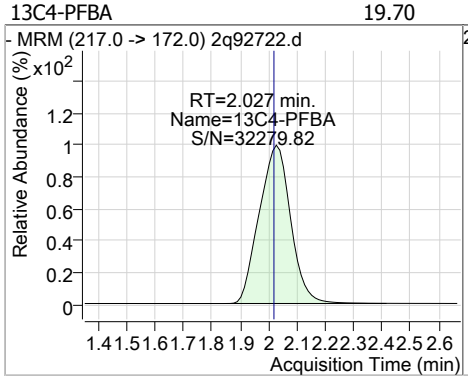
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%			
13C6-PFDA	7.754	519.0 -> 474.0	349822	19.21	µg/L		-0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.0%			
13C7-PFUnDA	8.243	570.0 -> 525.0	437702	19.34	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%			
13C8-FOSA	7.124	506.0 -> 78.0	76180	20.70	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%			
13C8-PFOA	6.624	421.0 -> 376.0	244559	19.00	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.0%			
13C8-PFOS	7.212	507.0 -> 99.0	20309	19.57	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%			
13C9-PFNA	7.227	472.0 -> 427.0	277564	19.03	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
d3-MeFOSAA	7.598	573.0 -> 419.0	69483	18.12	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%			
13C3-HFPO-DA	5.306	287.0 -> 169.0	5411	20.78	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%			
d3-MeFOSA	7.539	515.0 -> 169.0	27798	19.86	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%			
Target Compounds							QValue
4:2FTS	4.925	327.0 -> 307.0	4673	0.98	µg/L		91
6:2FTS	6.622	427.0 -> 407.0	7453	0.99	µg/L		100
8:2FTS	7.791	527.0 -> 507.0	7035	1.03	µg/L		99
EtFOSAA	7.748	584.0 -> 419.0	2681	0.95	µg/L	m	96
FOSA	7.125	498.0 -> 78.0	4061	1.02	µg/L		99
MeFOSAA	7.611	570.0 -> 419.0	3127	0.98	µg/L	m	98
PFBA	2.021	213.0 -> 169.0	1969	1.01	µg/L		100
PFBS	3.994	299.0 -> 80.0	1740	1.05	µg/L		99
PFDA	7.755	513.0 -> 469.0	17580	0.99	µg/L		99
PFDoDA	8.769	613.0 -> 569.0	23576	0.98	µg/L		100
PFDS	8.190	599.0 -> 80.0	807	1.01	µg/L		87
PFHpA	5.917	363.0 -> 319.0	14796	1.00	µg/L		100
PFHpS	6.632	449.0 -> 80.0	1858	1.12	µg/L		96
PFHxA	5.015	313.0 -> 269.0	4701	1.00	µg/L		97
PFHxS	5.949	399.0 -> 80.0	1862	1.06	µg/L	m	99
PFNA	7.227	463.0 -> 419.0	15442	1.00	µg/L		99
PFNS	7.713	549.0 -> 80.0	1450	1.01	µg/L		92
PFOA	6.624	413.0 -> 369.0	13632	1.03	µg/L		98
PFOS	7.200	499.0 -> 80.0	1738	0.98	µg/L	m	94
PFPeA	3.739	263.0 -> 219.0	6970	1.05	µg/L		100
PFPeS	5.132	349.0 -> 80.0	1130	0.99	µg/L		98
PFTeDA	10.095	713.0 -> 669.0	28581	1.02	µg/L		100
PFTrDA	9.417	663.0 -> 619.0	27120	0.96	µg/L		100
PFUnDA	8.245	563.0 -> 519.0	19336	0.96	µg/L		98
11Cl-PF3OUdS	8.415	631.0 -> 451.0	8065	0.99	µg/L		98
9Cl-PF3ONS	7.486	531.0 -> 351.0	1875	0.99	µg/L		92
ADONA	6.019	377.0 -> 251.0	17844	0.97	µg/L		97
HFPO-DA	5.300	329.0 -> 169.0	1888	0.97	µg/L		98
MeFOSA	7.541	512.0 -> 219.0	1309	1.12	µg/L		92

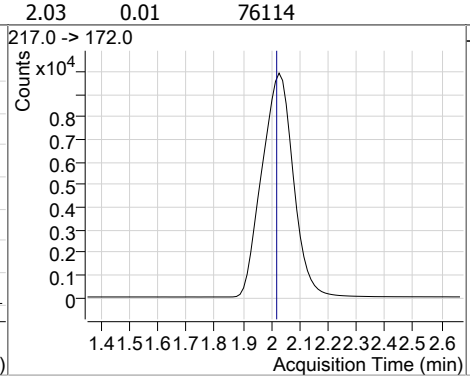
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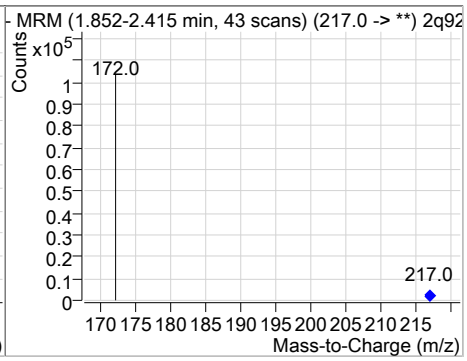
Perfluorinated Compounds by LC/MS/MS



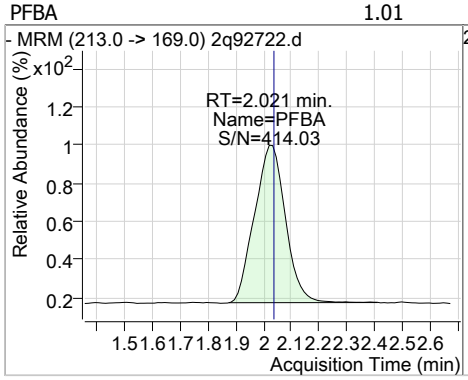
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.70	2.03	0.01	76114				

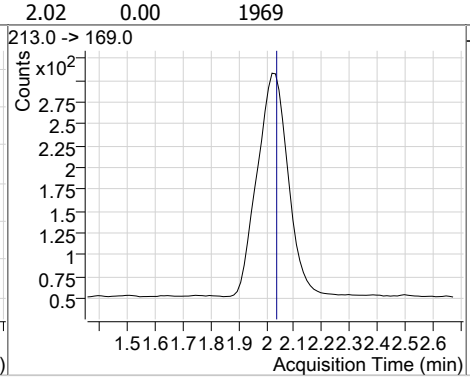


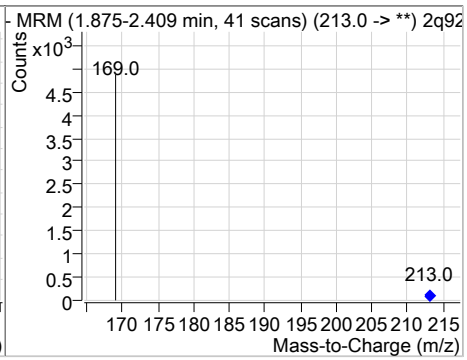




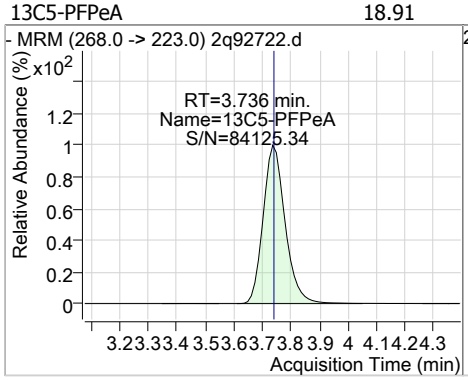
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.01	2.02	0.00	1969				

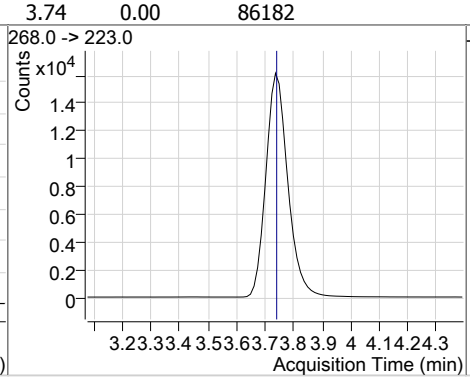


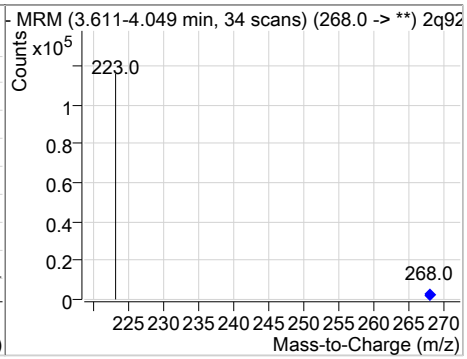




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.91	3.74	0.00	86182				

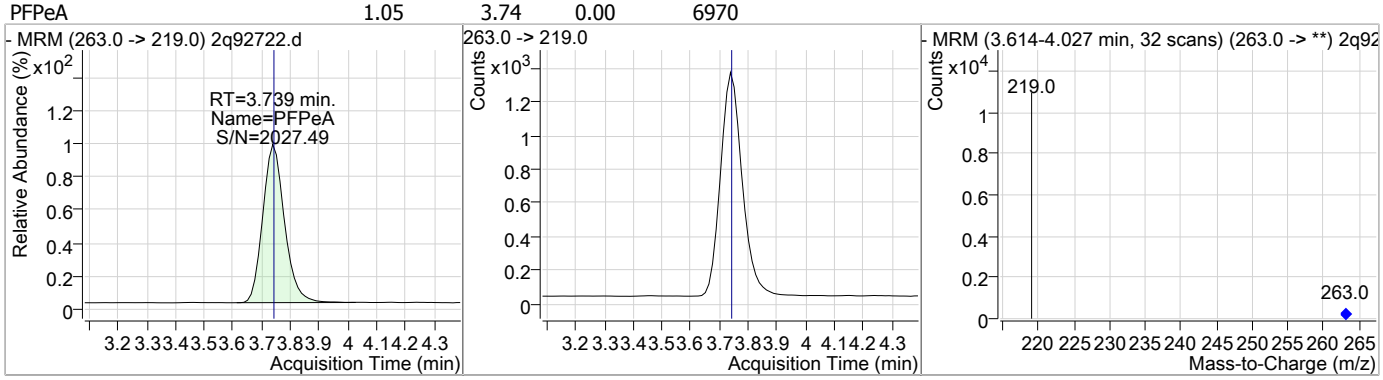




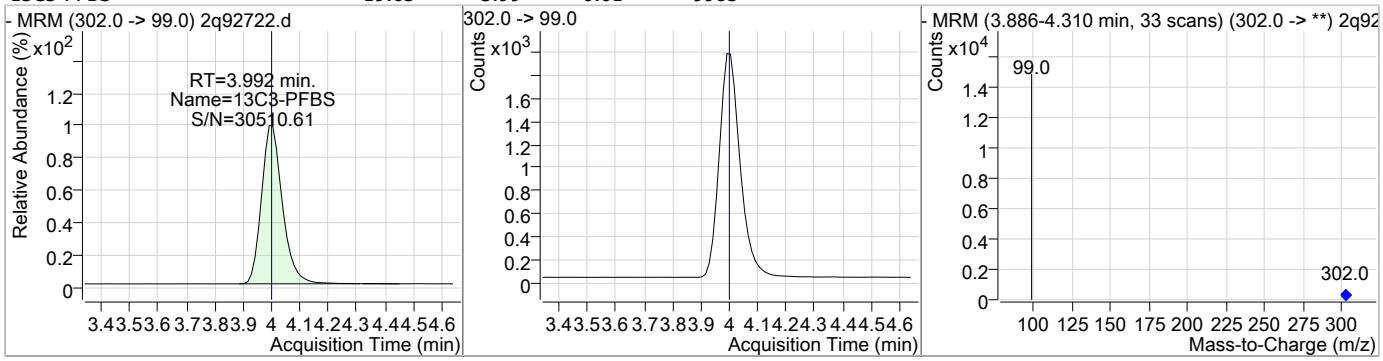


Perfluorinated Compounds by LC/MS/MS

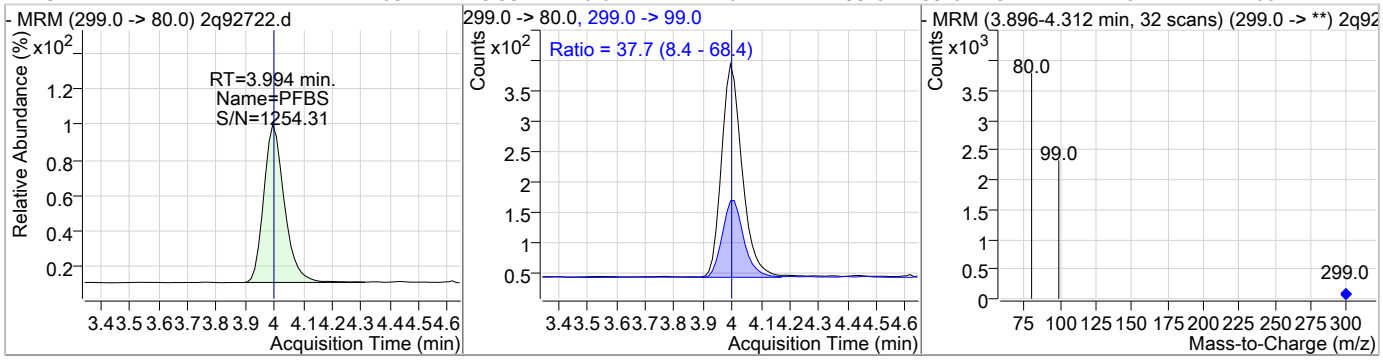
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.05	3.74	0.00	6970				



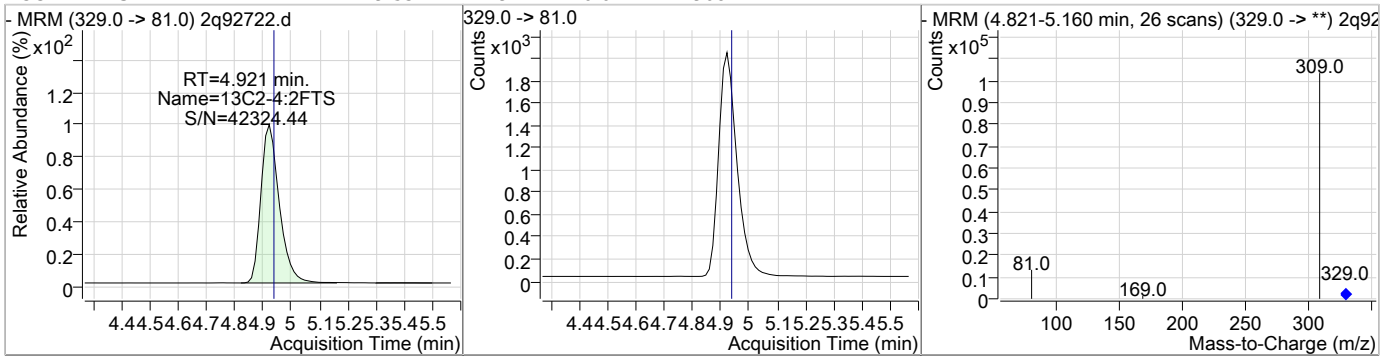
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.63	3.99	-0.01	9985				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.05	3.99	-0.01	1740	299.0 -> 99.0	37.7	8.4	68.4

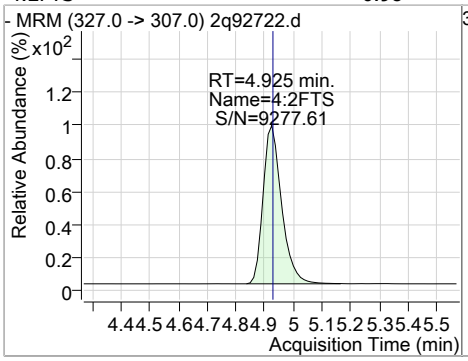


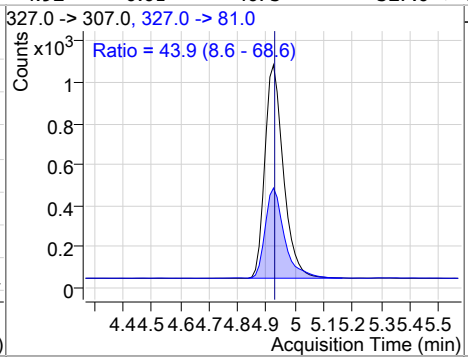
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.53	4.92	-0.01	9087				

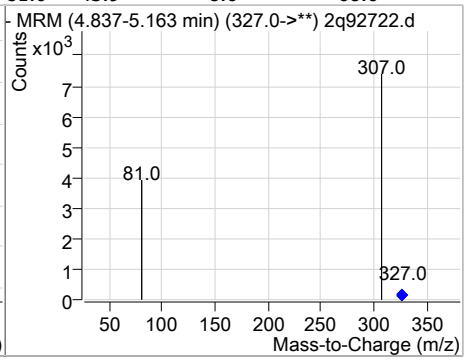


Perfluorinated Compounds by LC/MS/MS

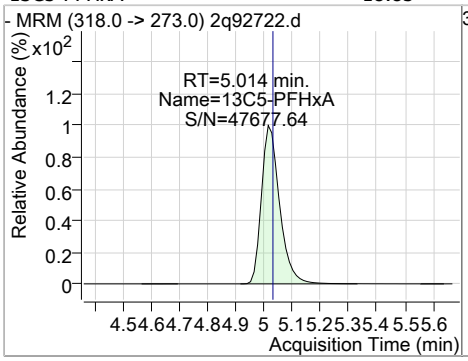
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.98	4.92	-0.01	4673	327.0 -> 81.0	43.9	8.6	68.6

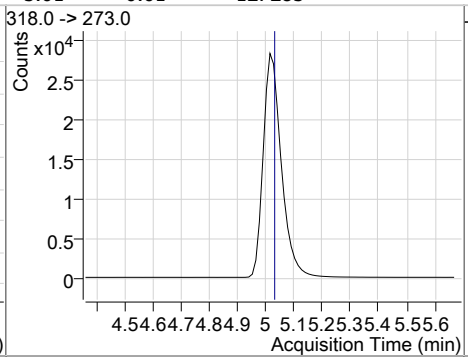


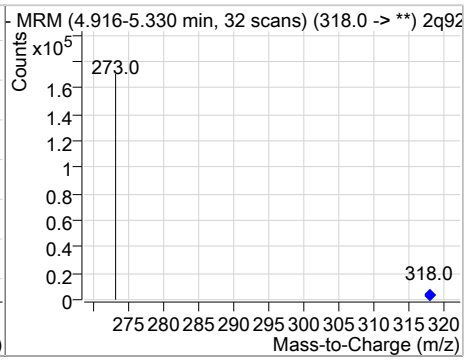




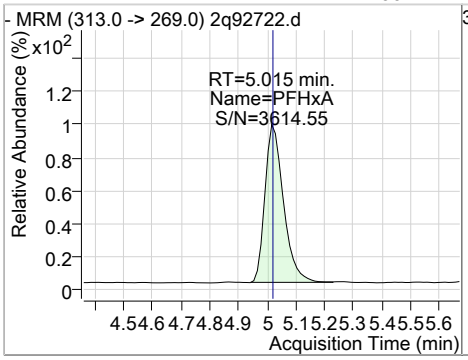
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.85	5.01	-0.01	127285				

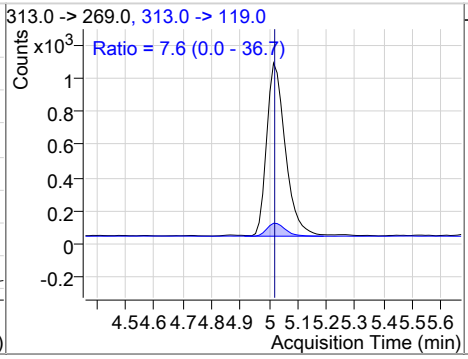


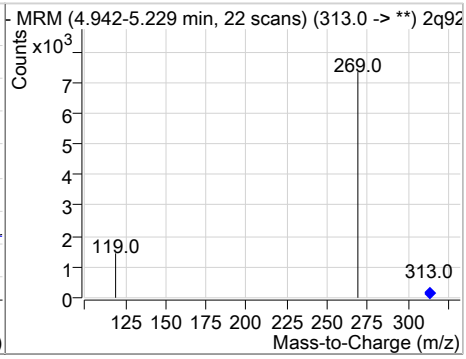




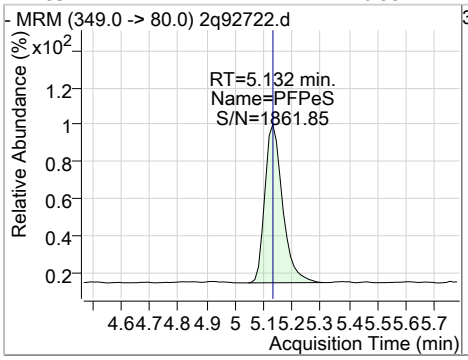
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.00	5.02	-0.01	4701	313.0 -> 119.0	7.6	0.0	36.7

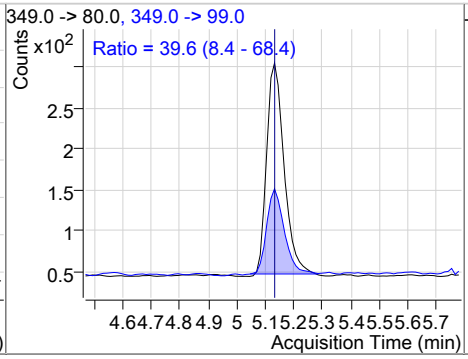


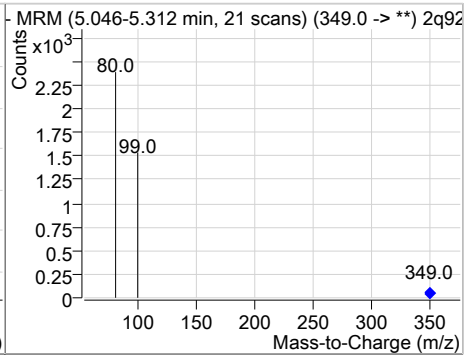




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.99	5.13	-0.01	1130	349.0 -> 99.0	39.6	8.4	68.4

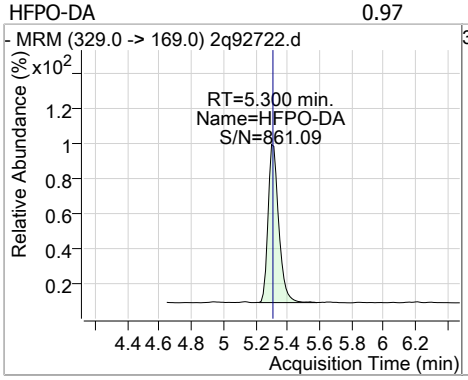


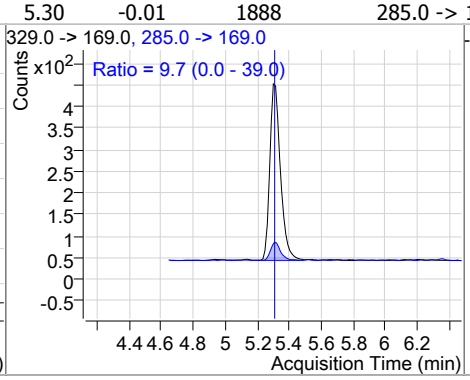


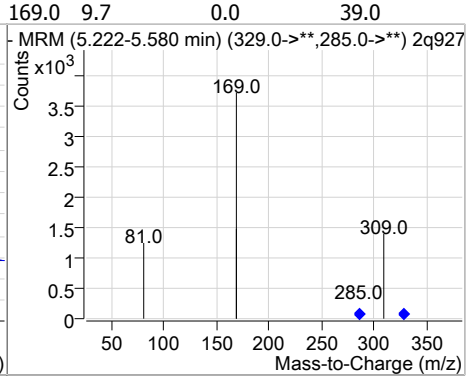


Perfluorinated Compounds by LC/MS/MS

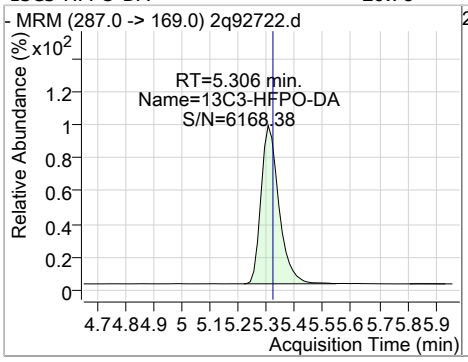
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.97	5.30	-0.01	1888	285.0 -> 169.0	9.7	0.0	39.0

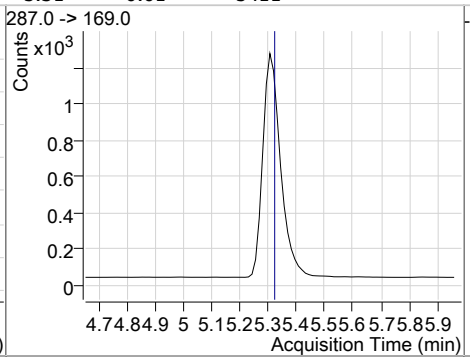


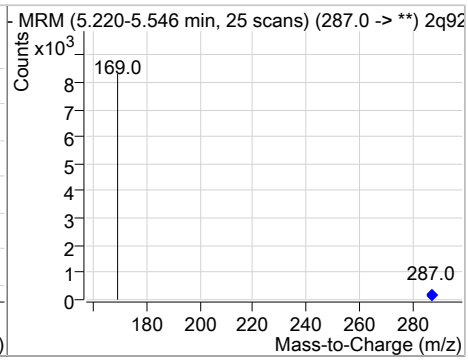




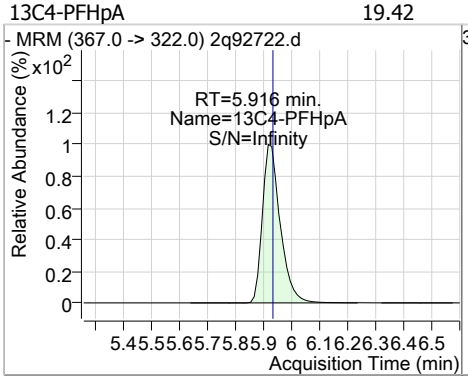
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.78	5.31	-0.01	5411				

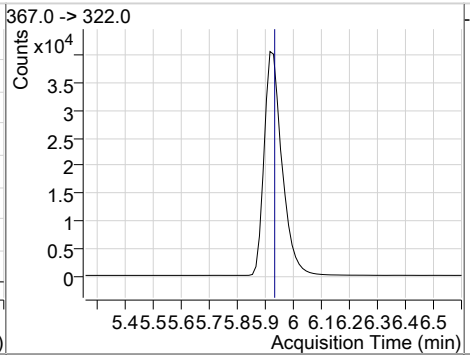


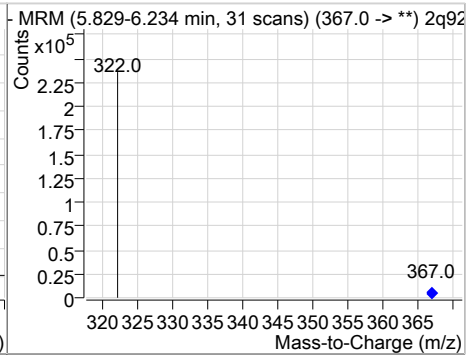




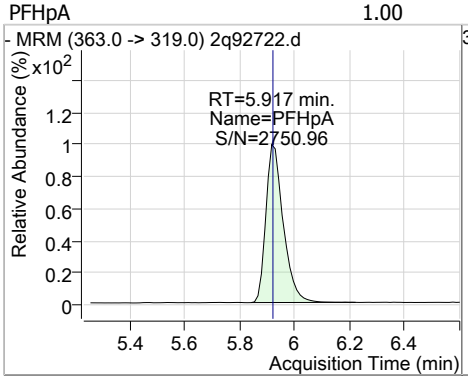
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.42	5.92	-0.01	180348				

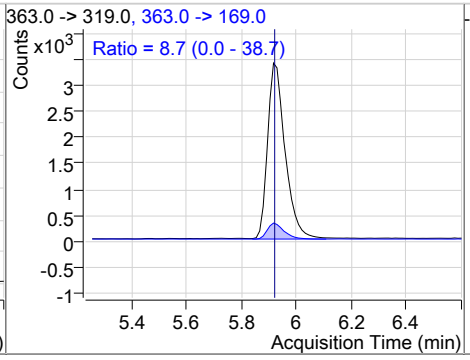


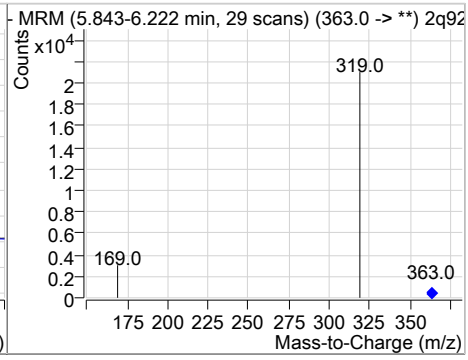




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.00	5.92	-0.01	14796	363.0 -> 169.0	8.7	0.0	38.7

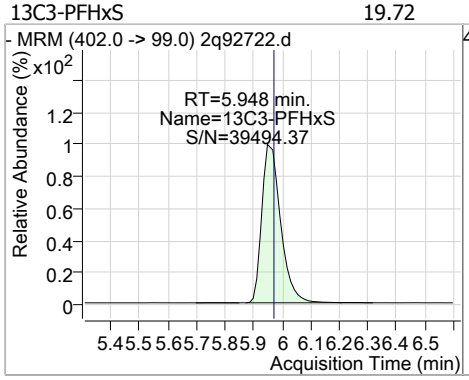


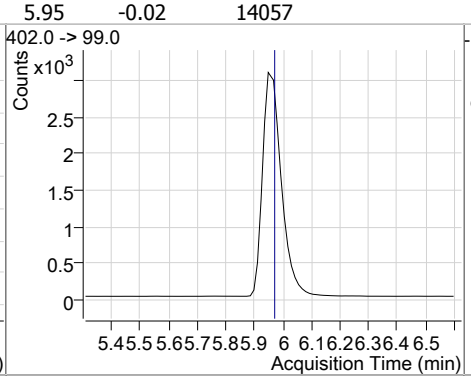


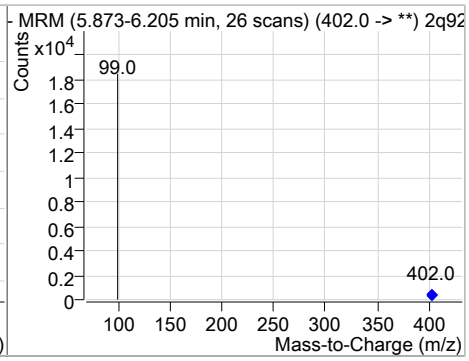


Perfluorinated Compounds by LC/MS/MS

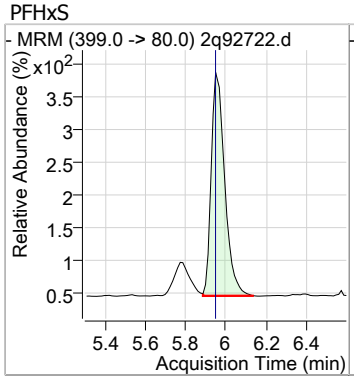
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.72	5.95	-0.02	14057				

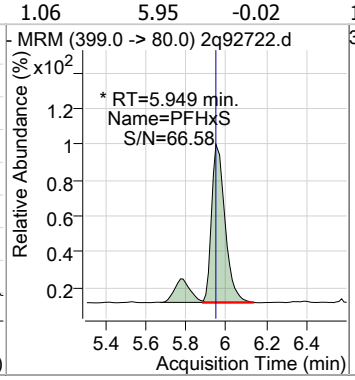


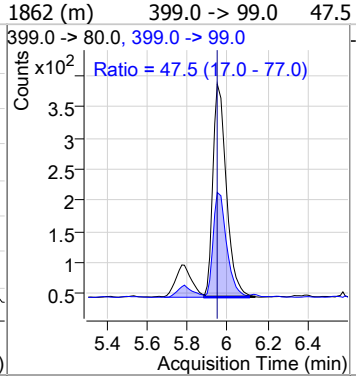


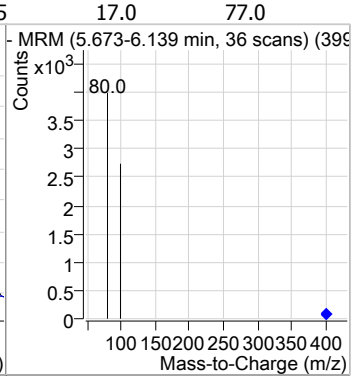


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.06	5.95	-0.02	1862 (m)	399.0 -> 99.0	47.5	17.0	77.0

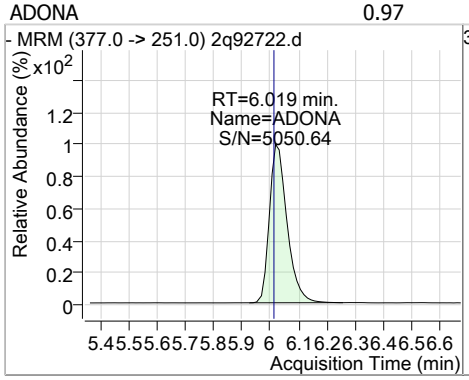


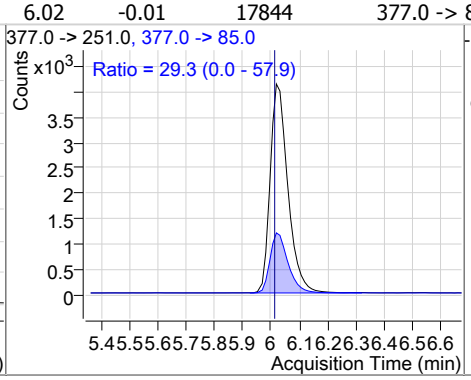


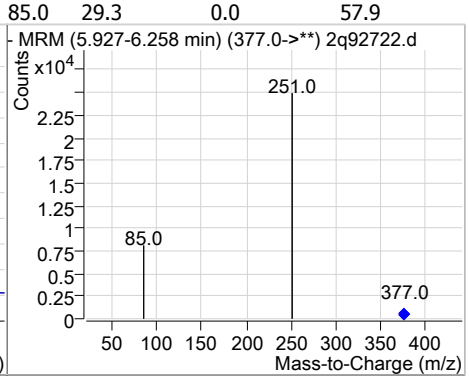




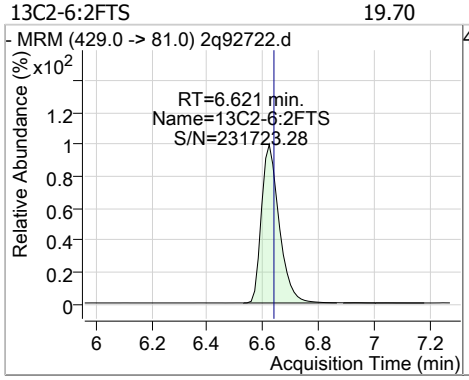
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.97	6.02	-0.01	17844	377.0 -> 85.0	29.3	0.0	57.9

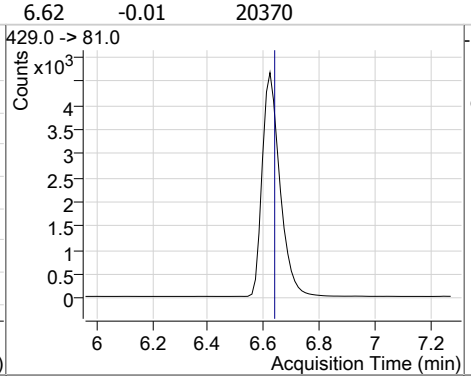


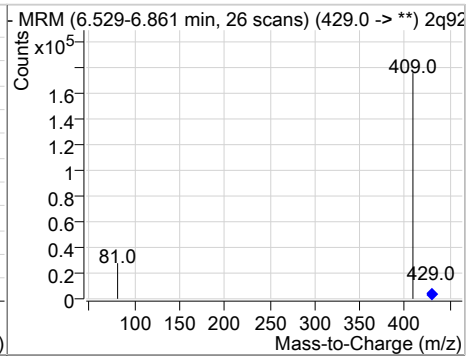




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.70	6.62	-0.01	20370				

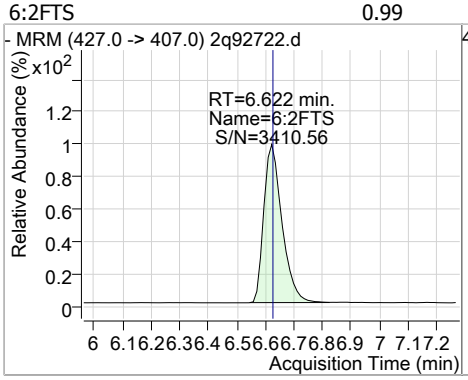


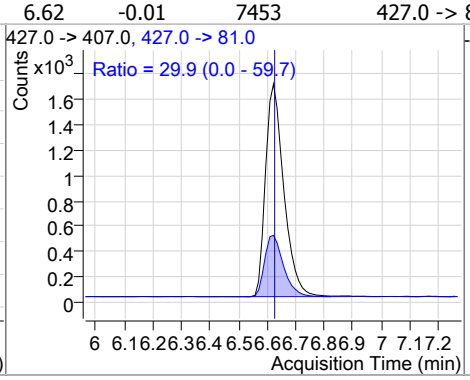


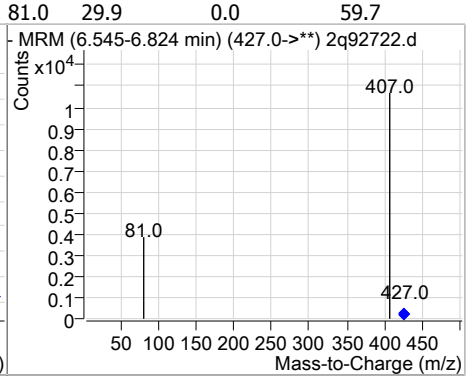


Perfluorinated Compounds by LC/MS/MS

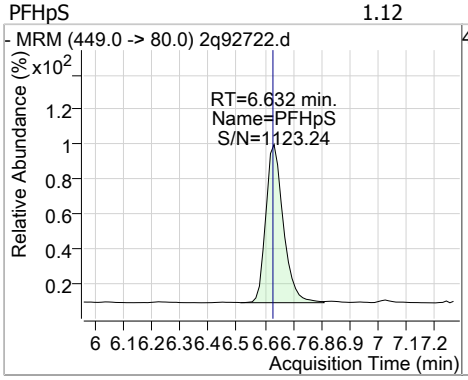
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.99	6.62	-0.01	7453	427.0 -> 81.0	29.9	0.0	59.7

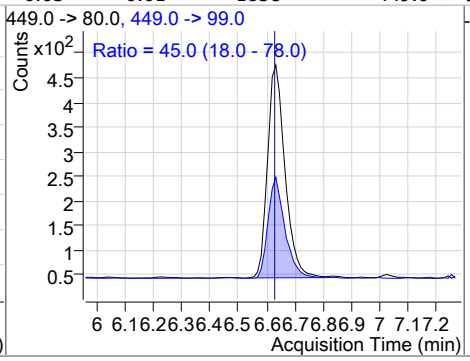


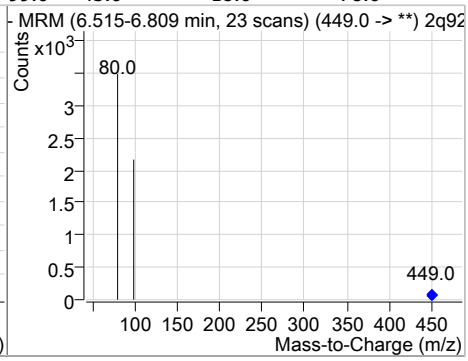




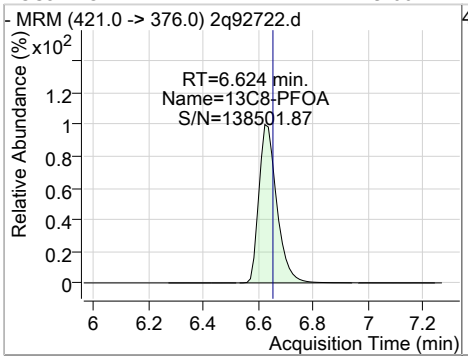
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.12	6.63	-0.01	1858	449.0 -> 99.0	45.0	18.0	78.0

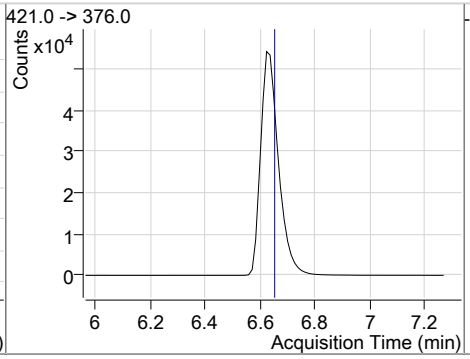


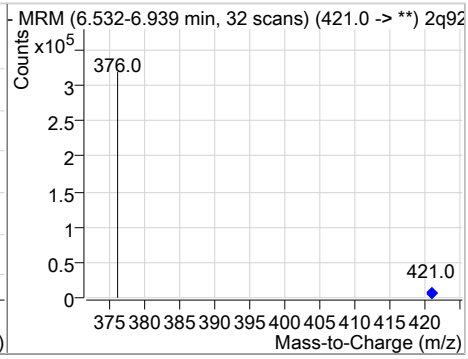




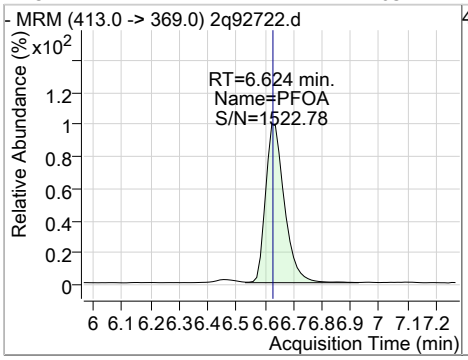
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.00	6.62	-0.03	244559				

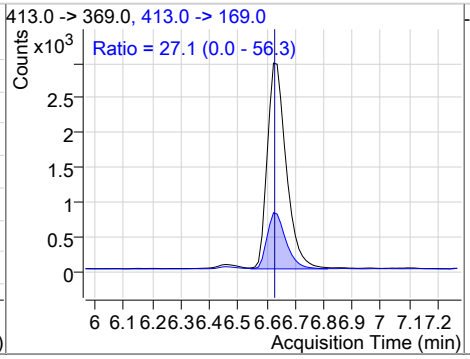


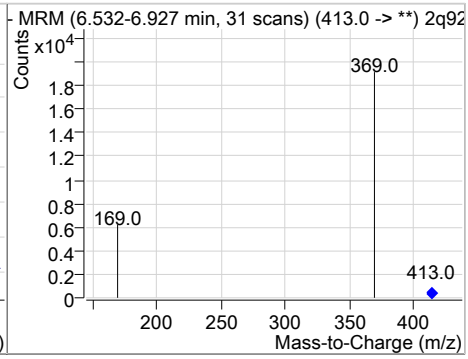




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.03	6.62	-0.03	13632	413.0 -> 169.0	27.1	0.0	56.3

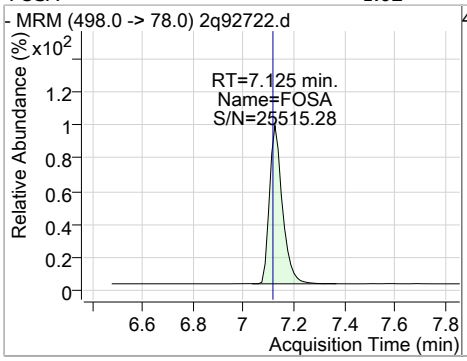


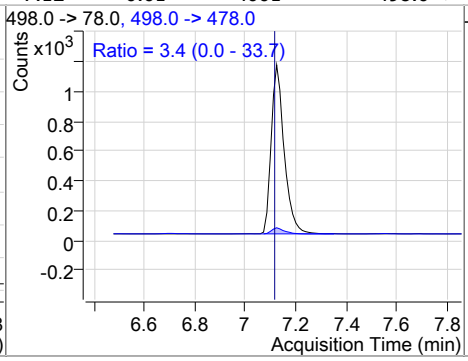


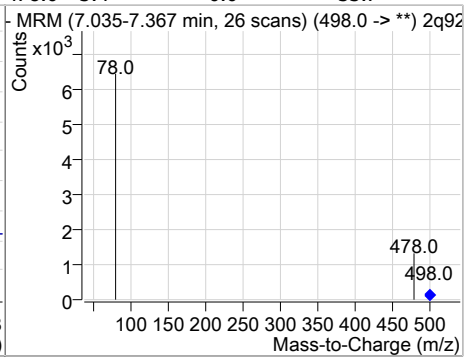


Perfluorinated Compounds by LC/MS/MS

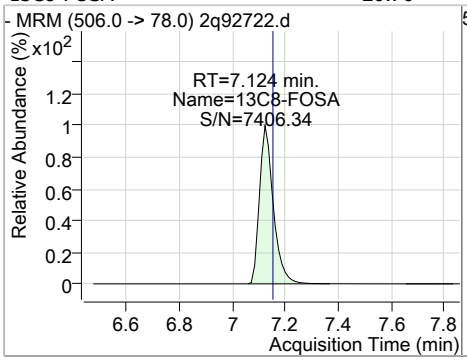
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.02	7.12	-0.01	4061	498.0 -> 478.0	3.4	0.0	33.7

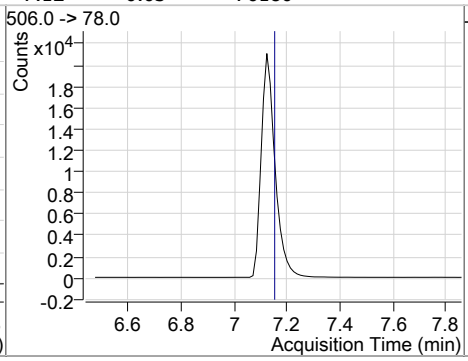


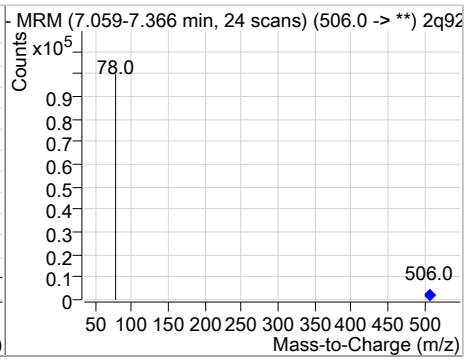




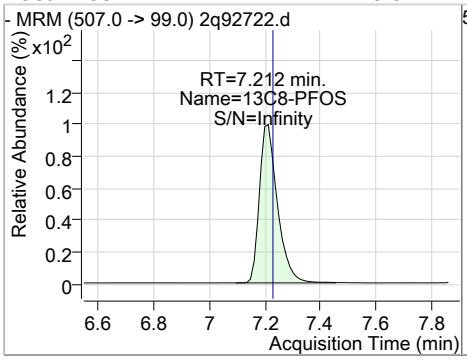
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.70	7.12	-0.03	76180				

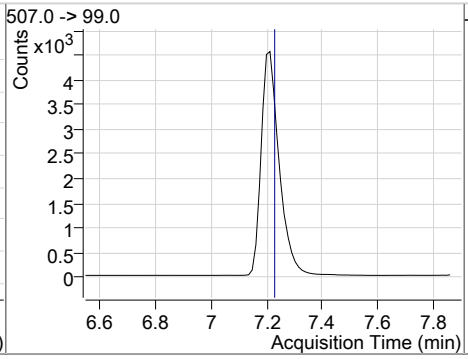


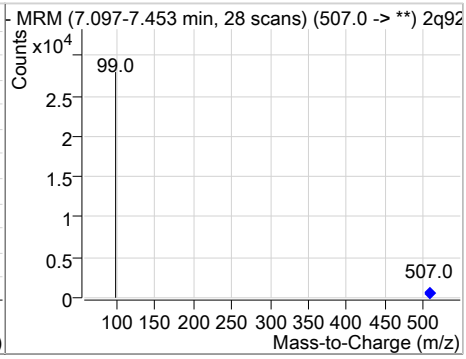




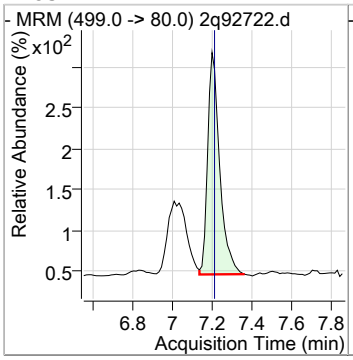
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.57	7.21	-0.01	20309				

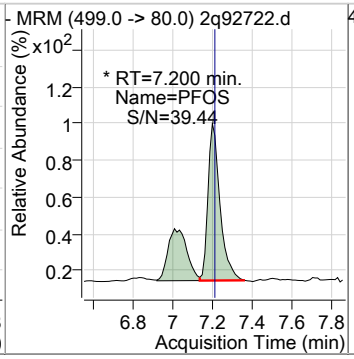


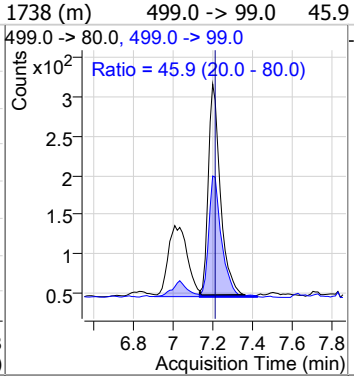


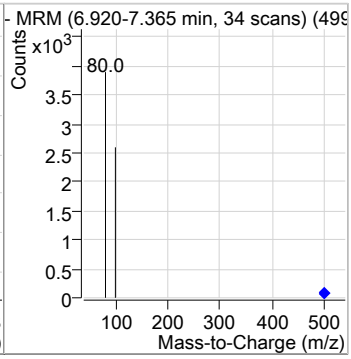


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.98	7.20	-0.03	1738 (m)	499.0 -> 99.0	45.9	20.0	80.0



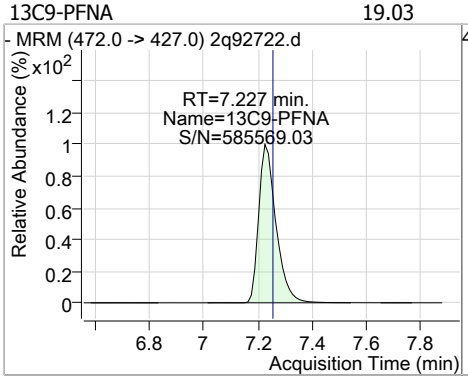


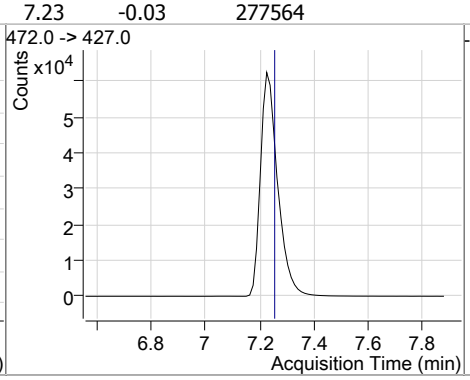


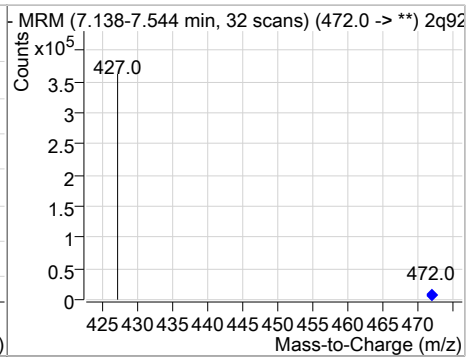


Perfluorinated Compounds by LC/MS/MS

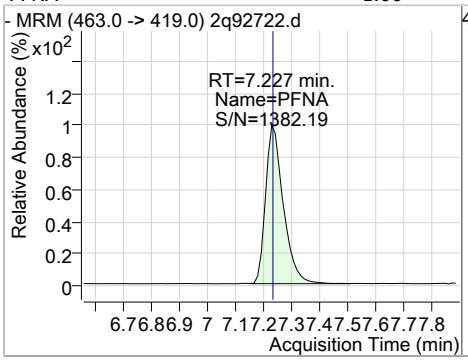
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.03	7.23	-0.03	277564				

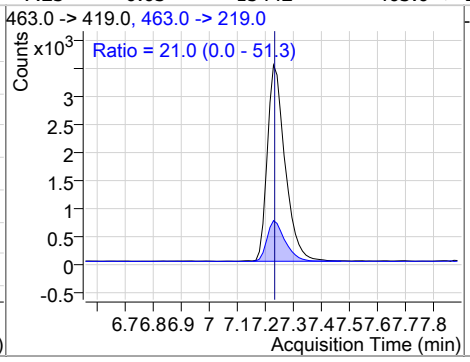


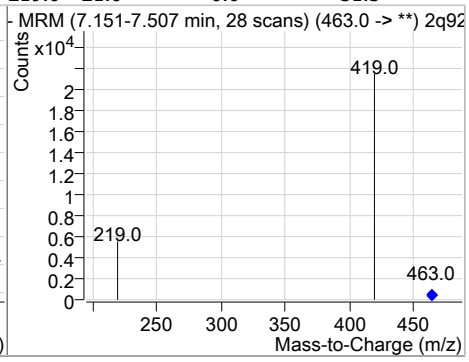




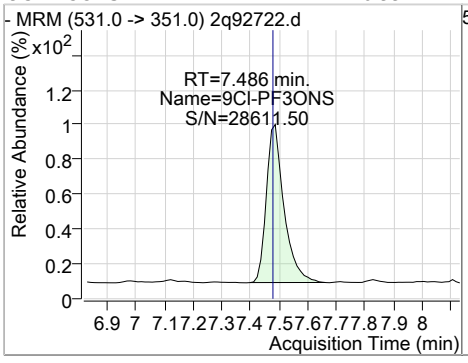
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.00	7.23	-0.03	15442	463.0 -> 219.0	21.0	0.0	51.3

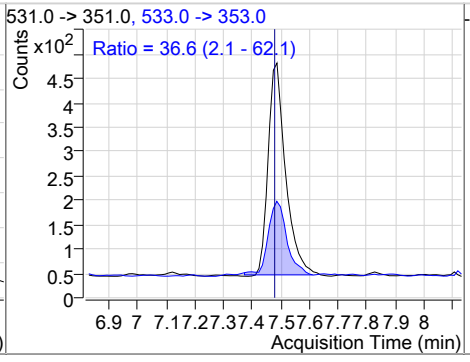


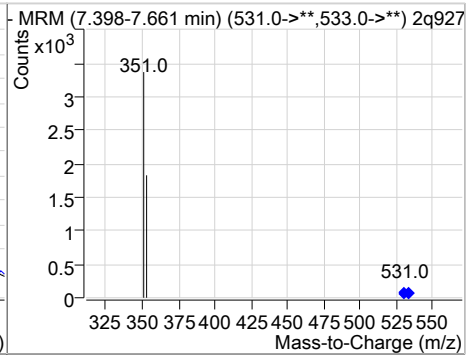




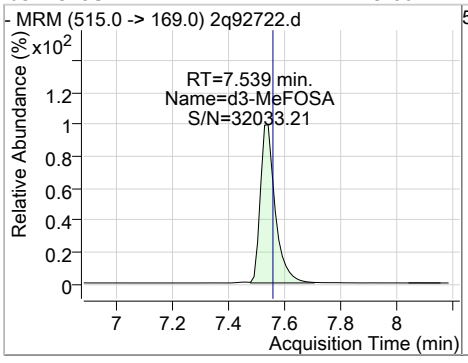
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.99	7.49	-0.01	1875	533.0 -> 353.0	36.6	2.1	62.1

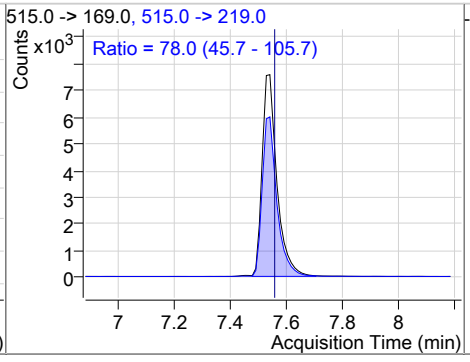


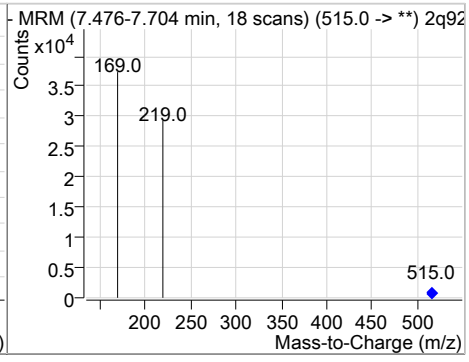




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	19.86	7.54	-0.01	27798	515.0 -> 219.0	78.0	45.7	105.7

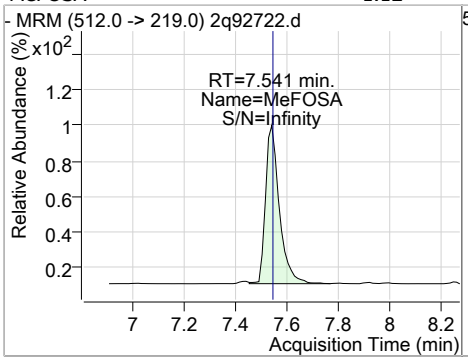


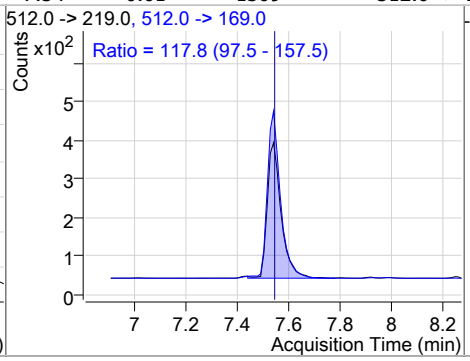


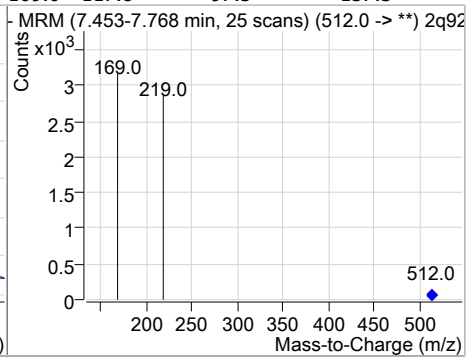


Perfluorinated Compounds by LC/MS/MS

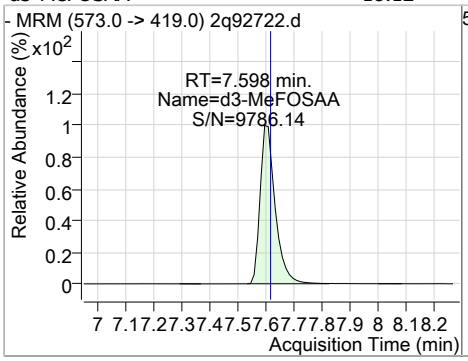
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.12	7.54	-0.01	1309	512.0 -> 169.0	117.8	97.5	157.5

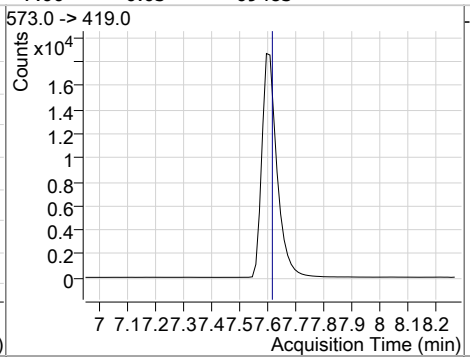


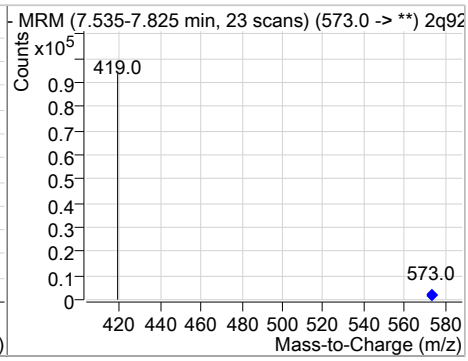




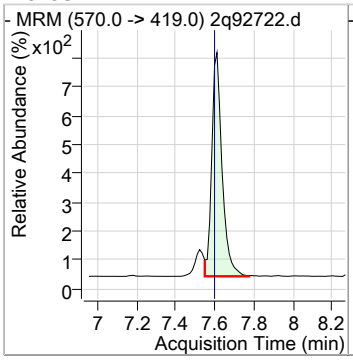
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.12	7.60	-0.03	69483				

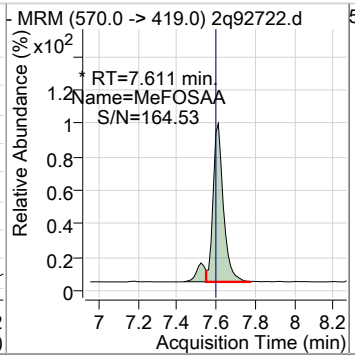


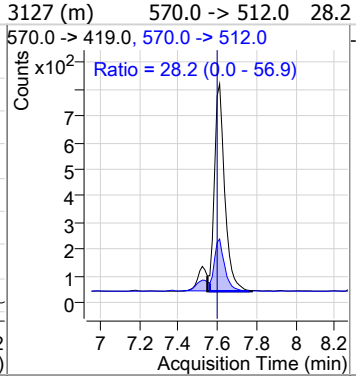


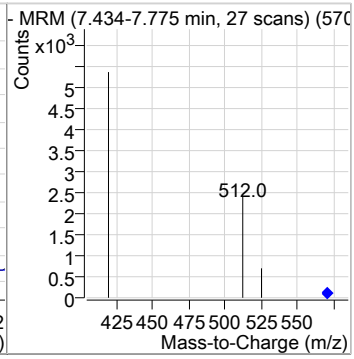


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.98	7.61	-0.01	3127 (m)	570.0 -> 512.0	28.2	0.0	56.9

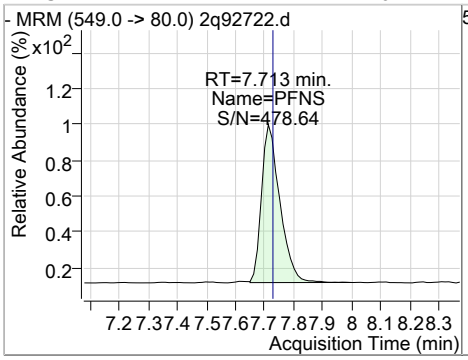


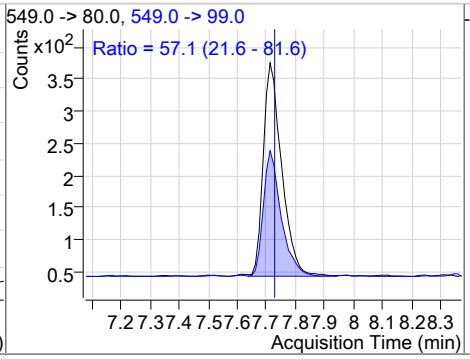


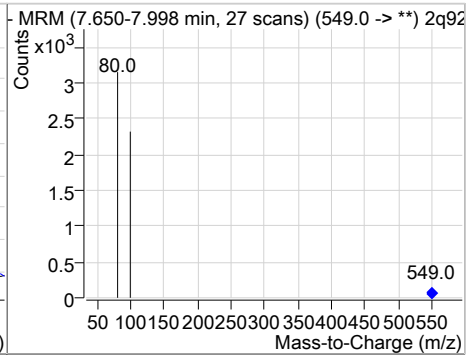




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.01	7.71	-0.03	1450	549.0 -> 99.0	57.1	21.6	81.6

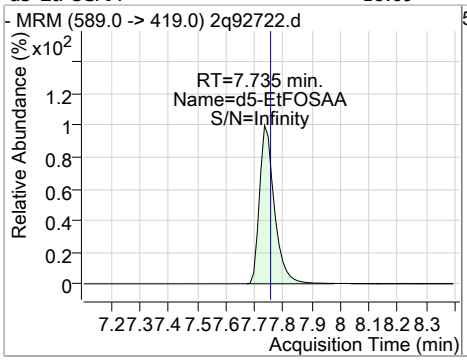


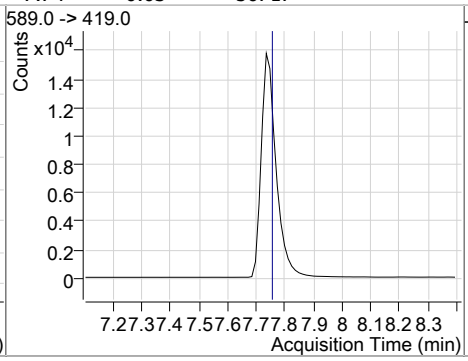


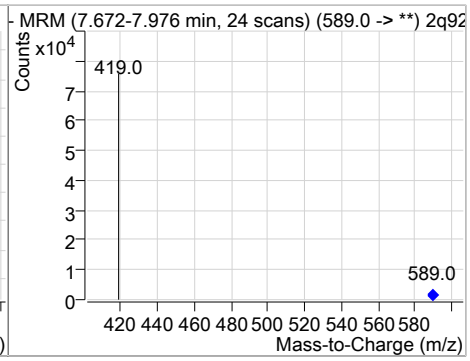


Perfluorinated Compounds by LC/MS/MS

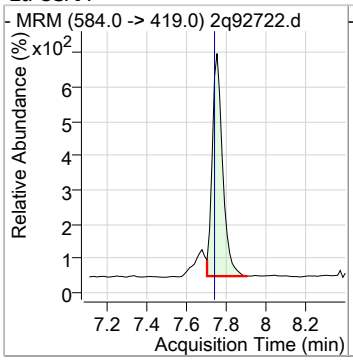
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	18.69	7.74	-0.03	56717				

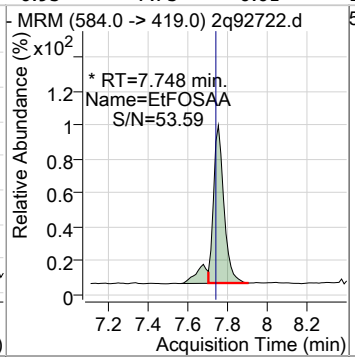


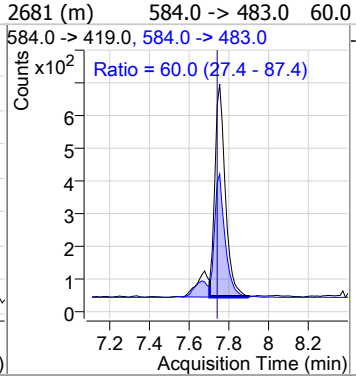


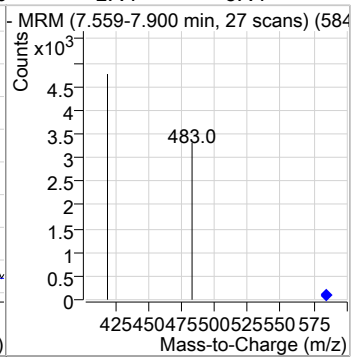


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.95	7.75	-0.01	2681 (m)	584.0 -> 483.0	60.0	27.4	87.4

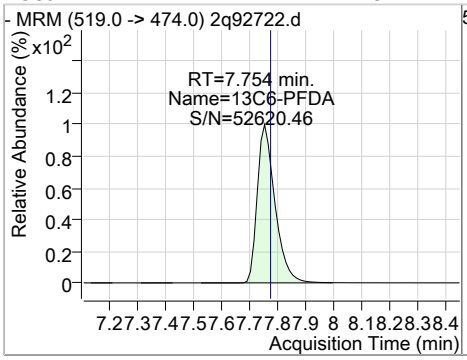


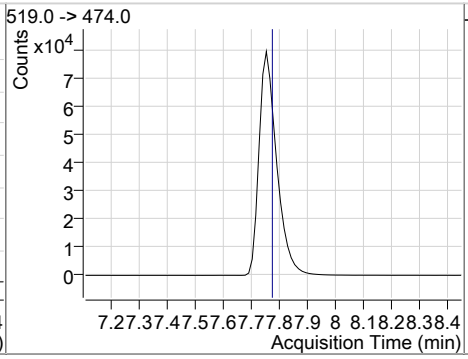


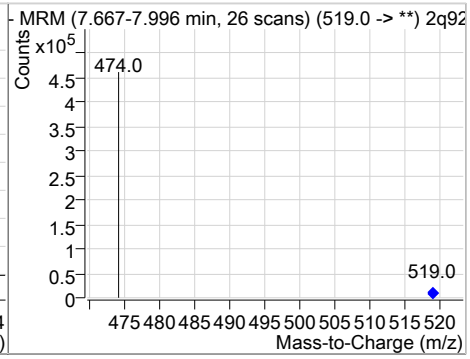




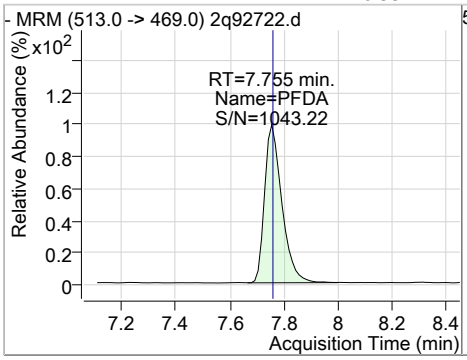
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.21	7.75	-0.03	349822				

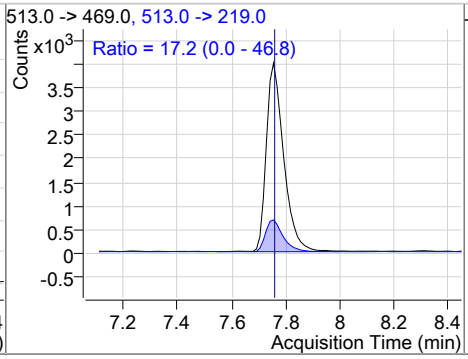


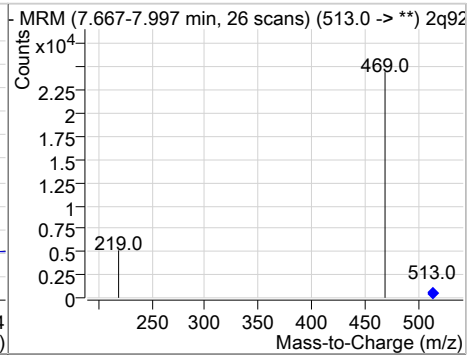




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.99	7.75	-0.03	17580	513.0 -> 219.0	17.2	0.0	46.8

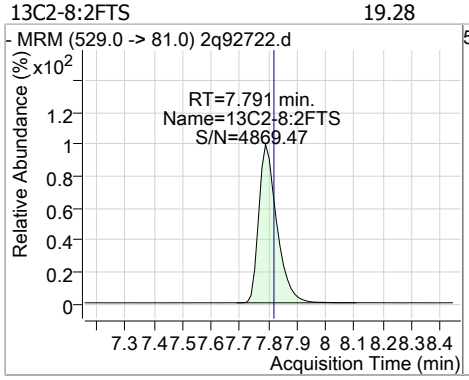


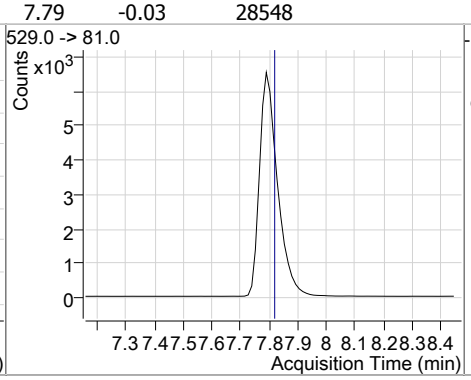


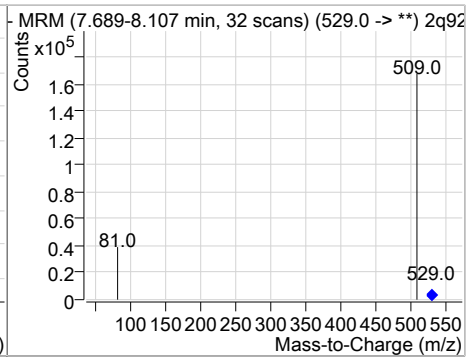


Perfluorinated Compounds by LC/MS/MS

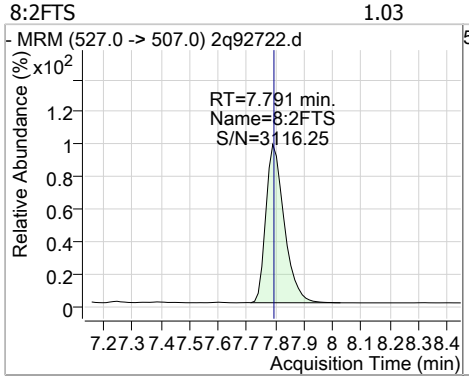
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.28	7.79	-0.03	28548				

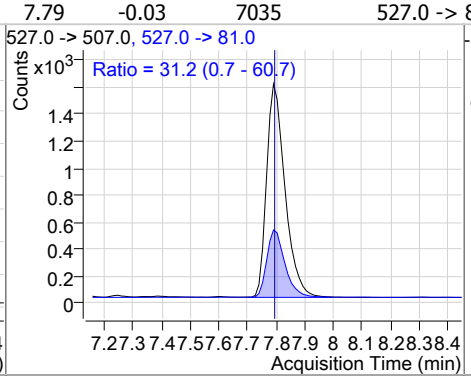


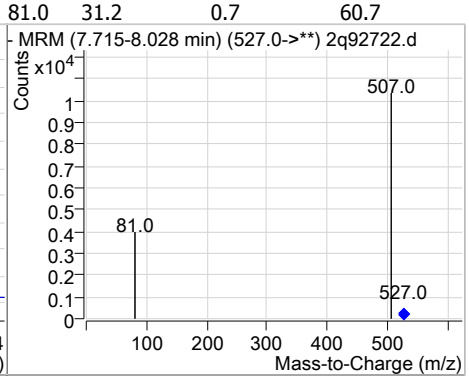




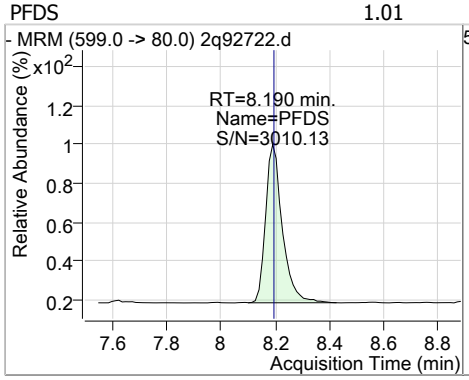
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.03	7.79	-0.03	7035	527.0 -> 81.0	31.2	0.7	60.7

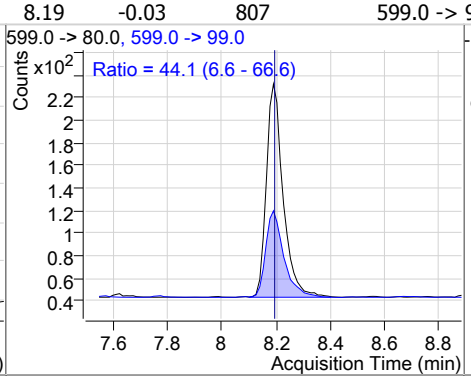


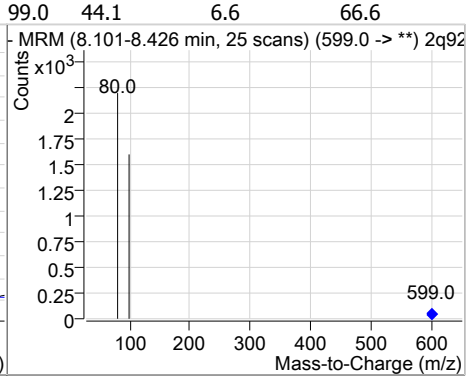




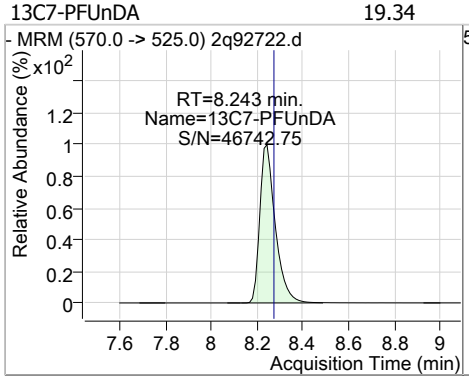
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.01	8.19	-0.03	807	599.0 -> 99.0	44.1	6.6	66.6

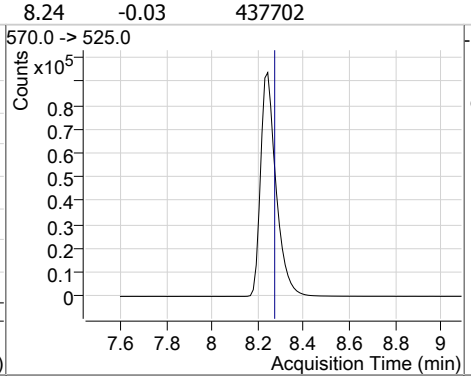


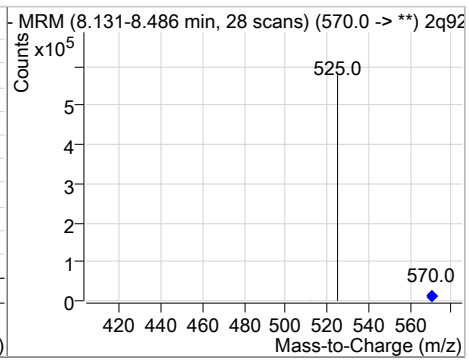




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.34	8.24	-0.03	437702				

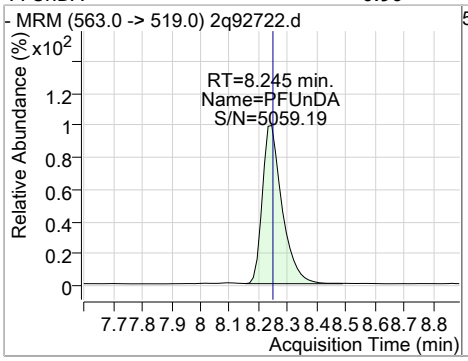


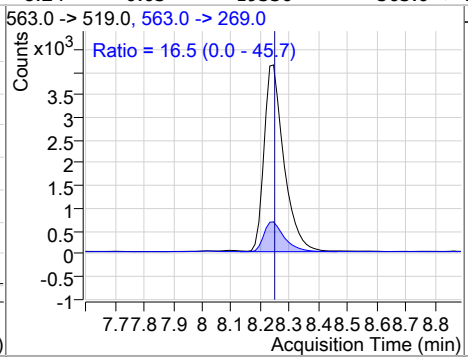


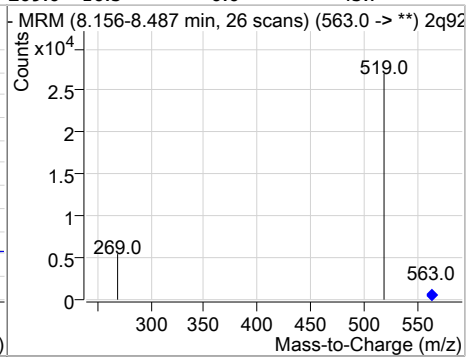


Perfluorinated Compounds by LC/MS/MS

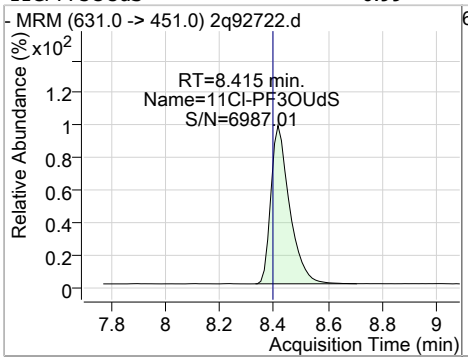
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.96	8.24	-0.03	19336	563.0 -> 269.0	16.5	0.0	45.7

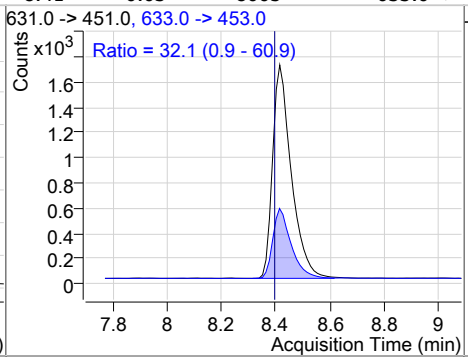


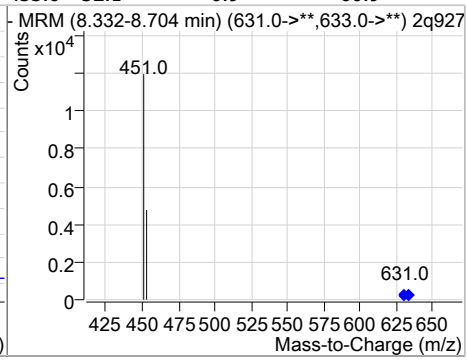




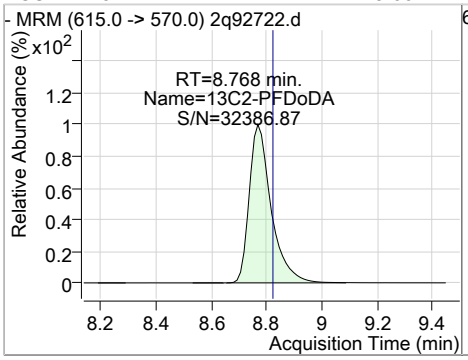
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.99	8.41	-0.03	8065	633.0 -> 453.0	32.1	0.9	60.9

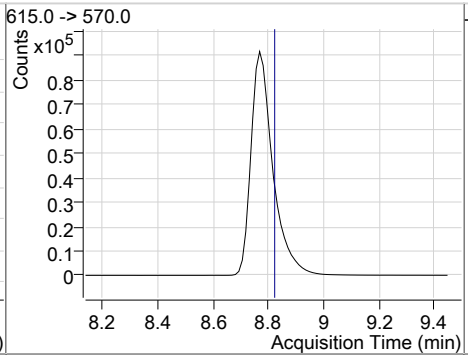


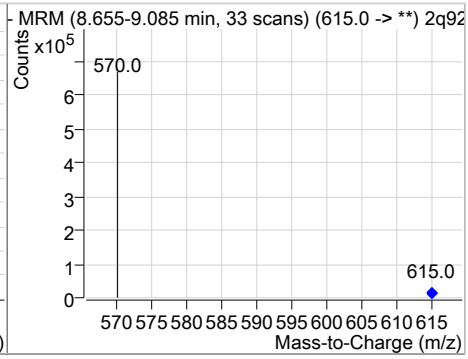




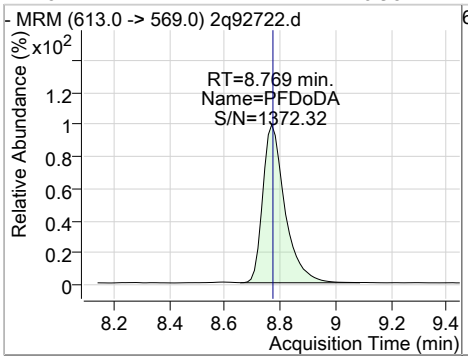
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.66	8.77	-0.05	503960				

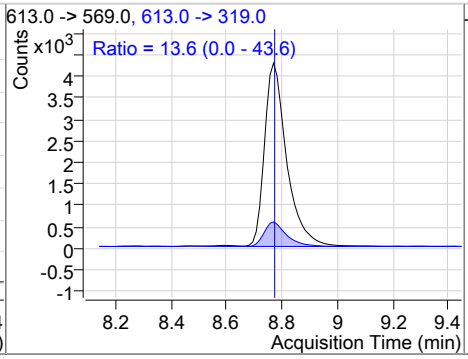


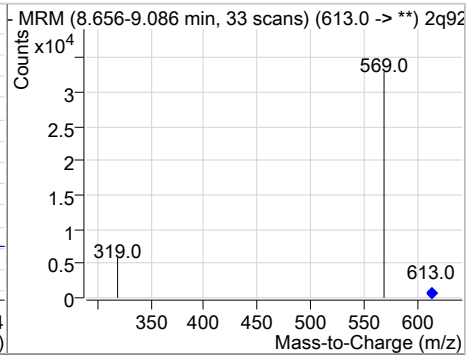




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.98	8.77	-0.05	23576	613.0 -> 319.0	13.6	0.0	43.6

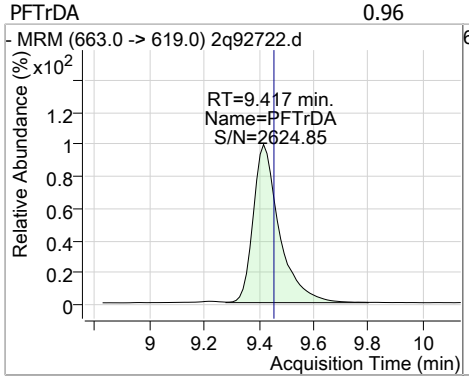


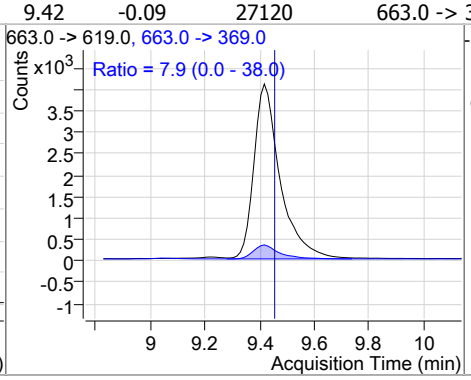


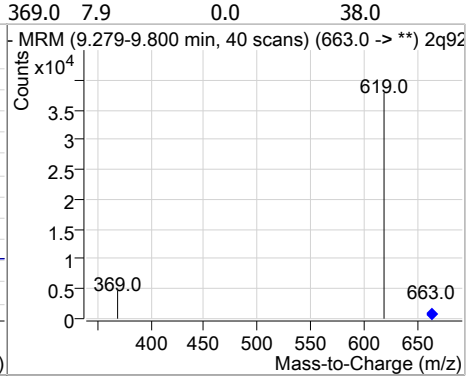


Perfluorinated Compounds by LC/MS/MS

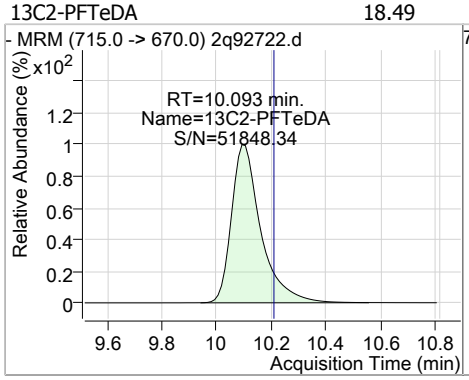
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.96	9.42	-0.09	27120	663.0 -> 369.0	7.9	0.0	38.0

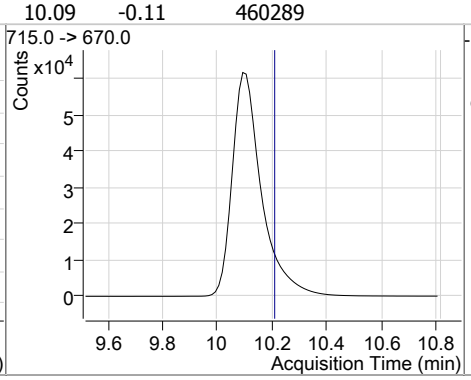


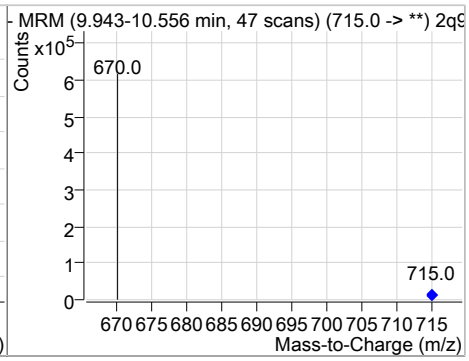




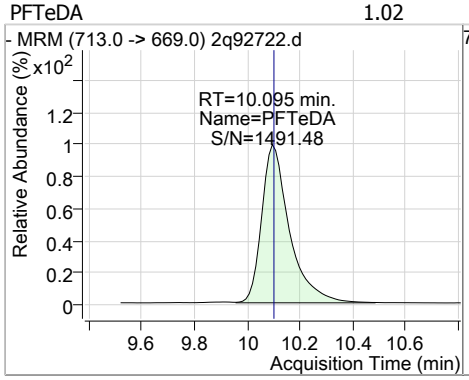
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.49	10.09	-0.11	460289				

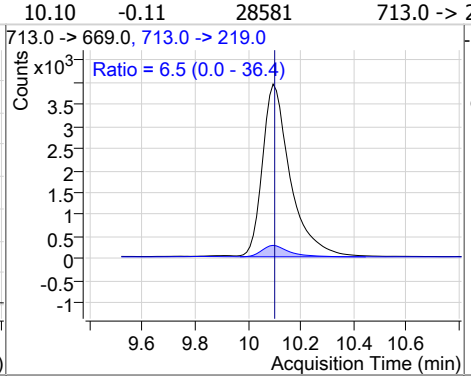


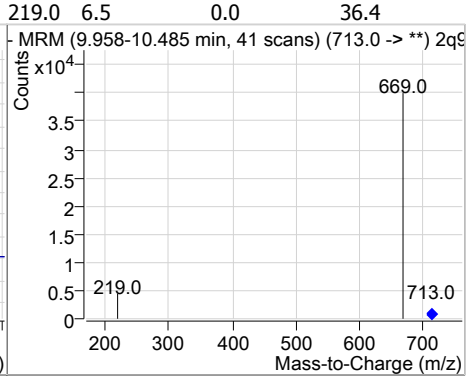




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.02	10.10	-0.11	28581	713.0 -> 219.0	6.5	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1298-CC1287
Lab FileID: 2Q92722.D
Injection Time: 06/08/22 11:52
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:05 Natasha Gumtie
Supervisor approved: 06/08/22 15:51 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 06/08/22 15:51

Perfluorinated Compounds by LC/MS/MS

Data File : 2q92731.d
Operator : jamesb
Acq. Method : 537_ID.m
Acq. Date-Time : 6/8/2022 2:41:11 PM
Sample Name : ecc1287-20
Vial : P1-A7
DA Method File : ID_050922_S2Q1287.quantmethod.xml
Batch Name : s2q1298.batch.bin
Sample Information : op91255,S2Q1298,250,,,1.0,1,water

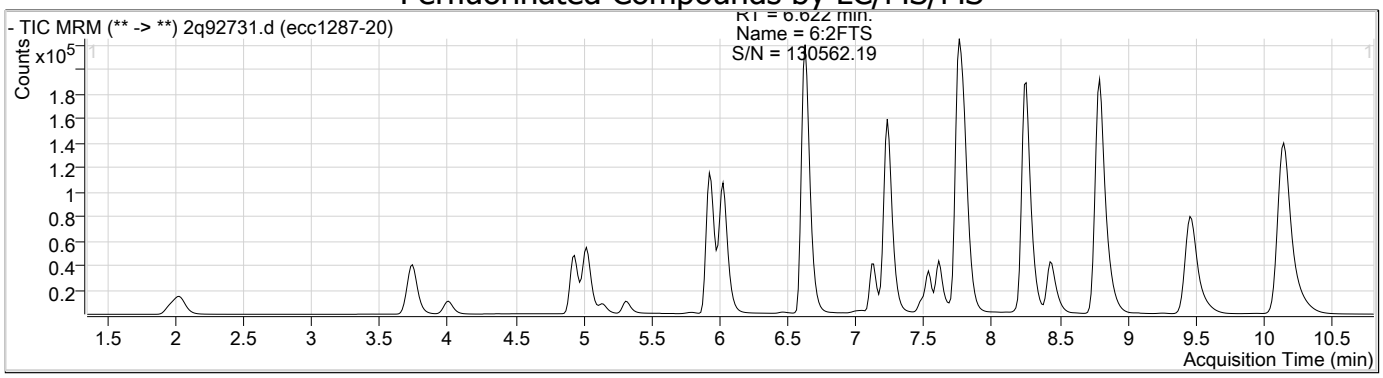
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M5-EtFOSAA	7.748	589.0 -> 419.0	57665	20.00	µg/L	-0.013
M4-PFBA	2.027	217.0 -> 172.0	80472	20.00	µg/L	0.012
M5-PFPeA	3.749	268.0 -> 223.0	92882	20.00	µg/L	0.012
M5-PFHxA	5.027	318.0 -> 273.0	135291	20.00	µg/L	0.000
M4-PFHpA	5.929	367.0 -> 322.0	190540	20.00	µg/L	0.000
M8-PFOA	6.636	421.0 -> 376.0	260546	20.00	µg/L	-0.013
M9-PFNA	7.239	472.0 -> 427.0	295169	20.00	µg/L	-0.013
M6-PFDA	7.766	519.0 -> 474.0	375546	20.00	µg/L	-0.013
M7-PFUnDA	8.256	570.0 -> 525.0	461972	20.00	µg/L	-0.013
M2-PFDoDA	8.793	615.0 -> 570.0	543500	20.00	µg/L	-0.025
M2-PFTeDA	10.143	715.0 -> 670.0	485368	20.00	µg/L	-0.063
M8-FOSA	7.136	506.0 -> 78.0	76656	20.00	µg/L	-0.013
M3-PFBS	4.004	302.0 -> 99.0	10702	20.00	µg/L	0.000
M3-PFHxS	5.967	402.0 -> 99.0	15003	20.00	µg/L	0.000
M8-PFOS	7.212	507.0 -> 99.0	21301	20.00	µg/L	-0.013
M2-4:2FTS	4.934	329.0 -> 81.0	9671	20.00	µg/L	0.000
M2-6:2FTS	6.633	429.0 -> 81.0	21253	20.00	µg/L	0.000
M2-8:2FTS	7.803	529.0 -> 81.0	30022	20.00	µg/L	-0.013
M3-MeFOSAA	7.610	573.0 -> 419.0	73760	20.00	µg/L	-0.013
M3-HFPO-DA	5.319	287.0 -> 169.0	5410	20.00	µg/L	0.000
M3-MeFOSA	7.539	515.0 -> 169.0	27524	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.934	329.0 -> 81.0	9671	20.79	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C2-6:2FTS	6.633	429.0 -> 81.0	21253	20.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C2-8:2FTS	7.803	529.0 -> 81.0	30022	20.27	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C2-PFDoDA	8.793	615.0 -> 570.0	543500	20.12	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C2-PFTeDA	10.143	715.0 -> 670.0	485368	19.50	µg/L	-0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%		
13C3-PFBS	4.004	302.0 -> 99.0	10702	21.04	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C3-PFHxS	5.967	402.0 -> 99.0	15003	21.04	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C4-PFBA	2.027	217.0 -> 172.0	80472	20.83	µg/L	0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C4-PFHpA	5.929	367.0 -> 322.0	190540	20.52	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
d5-EtFOSAA	7.748	589.0 -> 419.0	57665	19.00	ng/ml	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.0%		
13C5-PFHxA	5.027	318.0 -> 273.0	135291	20.04	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C5-PFPeA	3.749	268.0 -> 223.0	92882	20.38	µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

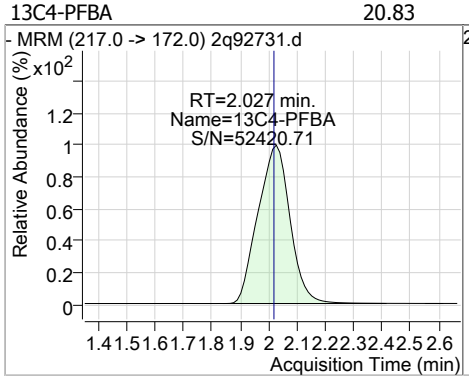
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
13C6-PFDA	7.766	519.0 -> 474.0	375546	20.62 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
13C7-PFUnDA	8.256	570.0 -> 525.0	461972	20.42 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C8-FOSA	7.136	506.0 -> 78.0	76656	20.83 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C8-PFOA	6.636	421.0 -> 376.0	260546	20.24 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C8-PFOS	7.212	507.0 -> 99.0	21301	20.53 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C9-PFNA	7.239	472.0 -> 427.0	295169	20.24 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
d3-MeFOSAA	7.610	573.0 -> 419.0	73760	19.23 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C3-HFPO-DA	5.319	287.0 -> 169.0	5410	20.78 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
d3-MeFOSA	7.539	515.0 -> 169.0	27524	19.67 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.3%		
Target Compounds						**QValue**
4:2FTS	4.937	327.0 -> 307.0	85356	16.85 µg/L		98
6:2FTS	6.622	427.0 -> 407.0	137853	17.59 µg/L		100
8:2FTS	7.804	527.0 -> 507.0	127037	17.77 µg/L		100
EtFOSAA	7.748	584.0 -> 419.0	50271	17.50 µg/L	m	97
FOSA	7.125	498.0 -> 78.0	70407	17.49 µg/L		99
MeFOSAA	7.610	570.0 -> 419.0	59661	17.61 µg/L	m	99
PFBA	2.021	213.0 -> 169.0	34764	16.85 µg/L		100
PFBS	4.007	299.0 -> 80.0	30676	17.19 µg/L		100
PFDA	7.767	513.0 -> 469.0	322123	16.93 µg/L		99
PFDoDA	8.794	613.0 -> 569.0	447087	17.15 µg/L		100
PFDS	8.203	599.0 -> 80.0	14776	17.54 µg/L		98
PFHpA	5.930	363.0 -> 319.0	269102	17.27 µg/L		100
PFHpS	6.632	449.0 -> 80.0	31273	17.74 µg/L		99
PFHxA	5.028	313.0 -> 269.0	86254	17.23 µg/L		99
PFHxS	5.967	399.0 -> 80.0	32204	17.10 µg/L	m	97
PFNA	7.240	463.0 -> 419.0	287476	17.52 µg/L		99
PFNS	7.726	549.0 -> 80.0	25918	17.28 µg/L		99
PFOA	6.637	413.0 -> 369.0	250166	17.68 µg/L		100
PFOS	7.213	499.0 -> 80.0	32496	17.43 µg/L	m	97
PFPeA	3.751	263.0 -> 219.0	126634	17.70 µg/L		100
PFPeS	5.145	349.0 -> 80.0	21293	17.45 µg/L		100
PFTeDA	10.147	713.0 -> 669.0	523520	17.72 µg/L		100
PFTrDA	9.454	663.0 -> 619.0	515148	16.87 µg/L		99
PFUnDA	8.257	563.0 -> 519.0	359544	16.99 µg/L		100
11Cl-PF3OUdS	8.427	631.0 -> 451.0	153400	17.51 µg/L		100
9Cl-PF3ONS	7.486	531.0 -> 351.0	33634	16.53 µg/L		98
ADONA	6.031	377.0 -> 251.0	334103	17.06 µg/L		100
HFPO-DA	5.314	329.0 -> 169.0	35239	18.06 µg/L		98
MeFOSA	7.541	512.0 -> 219.0	21563	18.57 µg/L		98

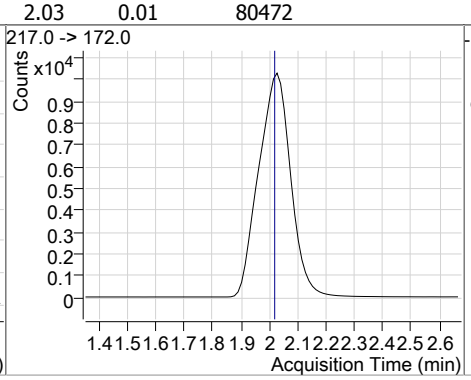
= Qualifier out of range, m = manually integrated, + = Area summed

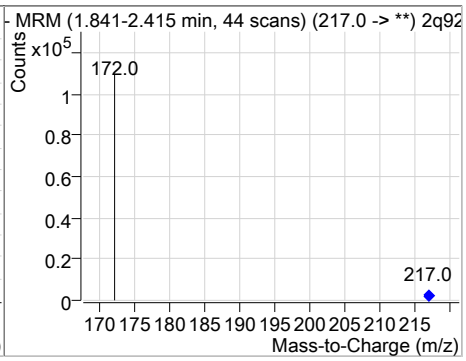
Perfluorinated Compounds by LC/MS/MS



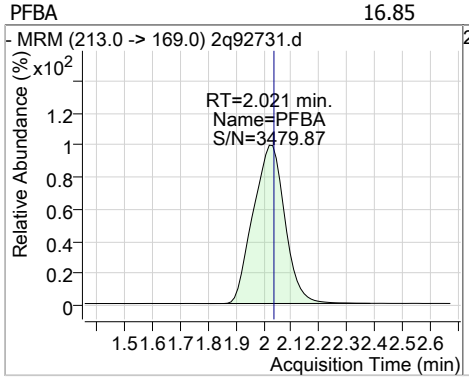
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.83	2.03	0.01	80472				

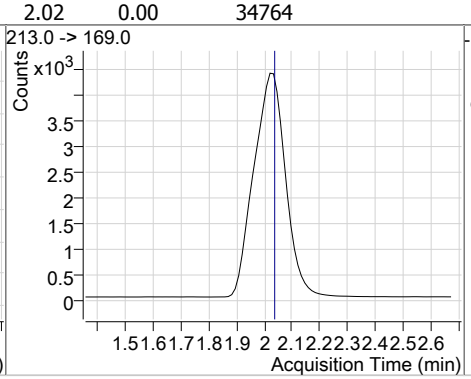


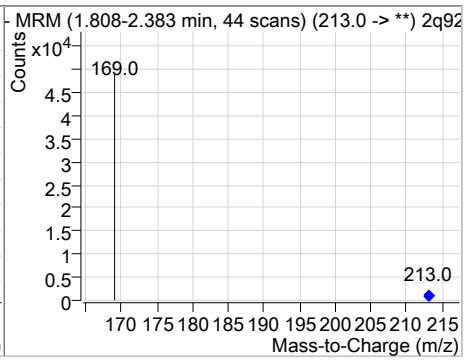




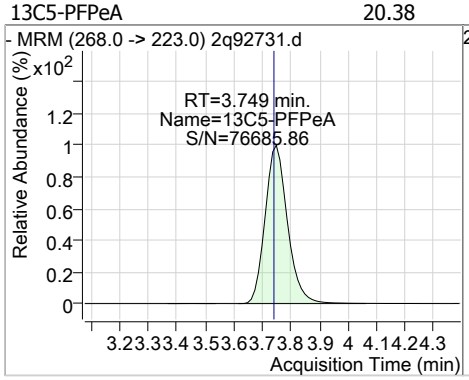
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	16.85	2.02	0.00	34764				

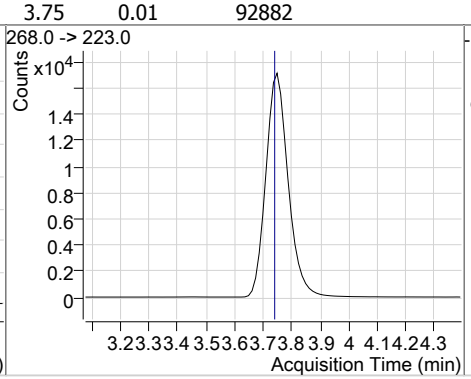


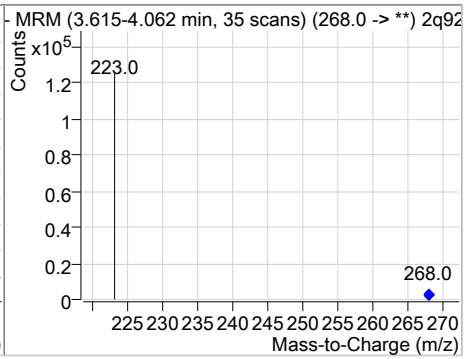




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.38	3.75	0.01	92882				

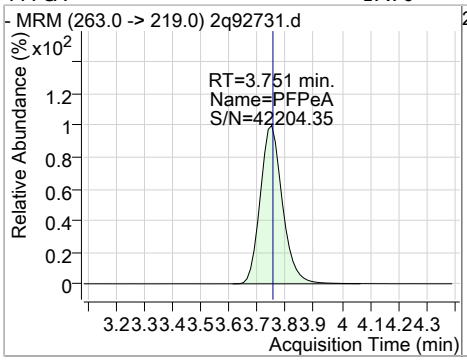


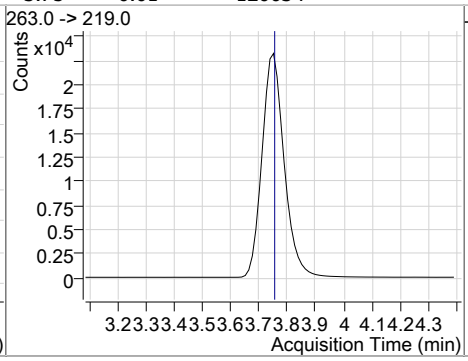


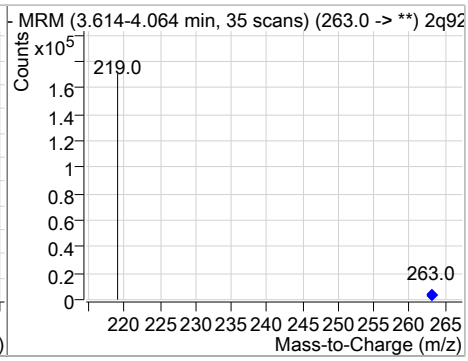


Perfluorinated Compounds by LC/MS/MS

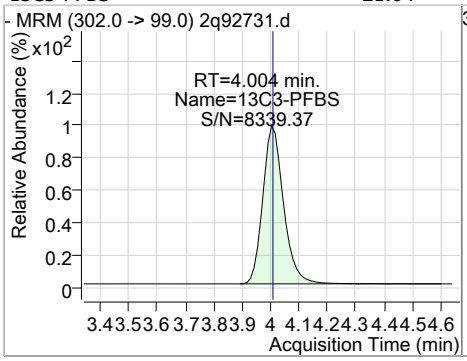
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.70	3.75	0.01	126634				

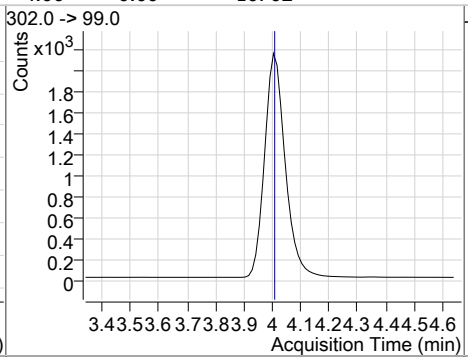


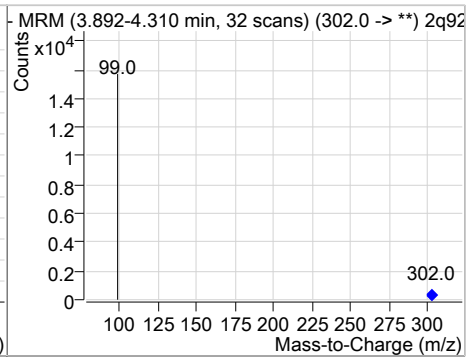




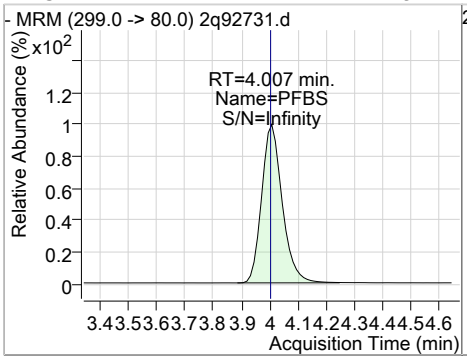
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.04	4.00	0.00	10702				

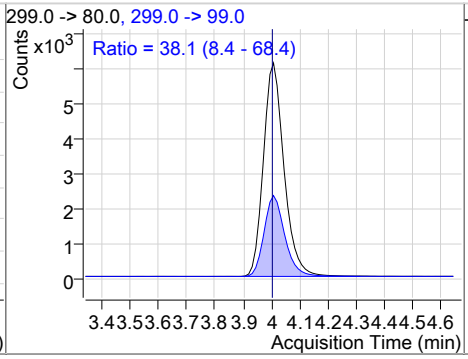


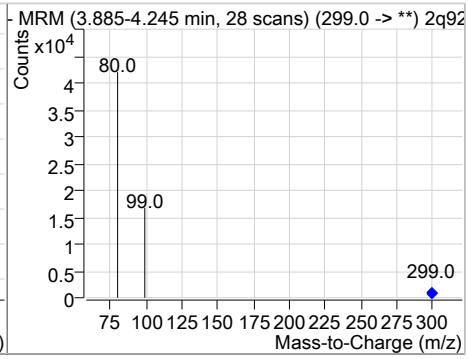




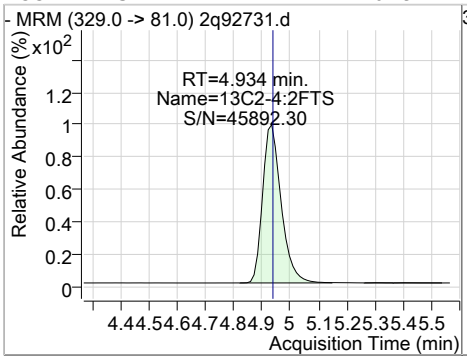
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.19	4.01	0.00	30676	299.0 -> 99.0	38.1	8.4	68.4

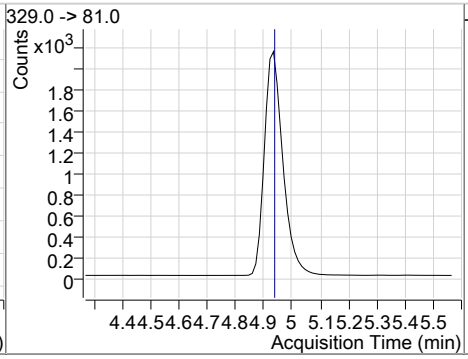


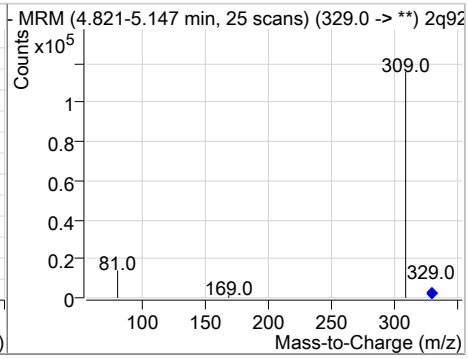




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.79	4.93	0.00	9671				

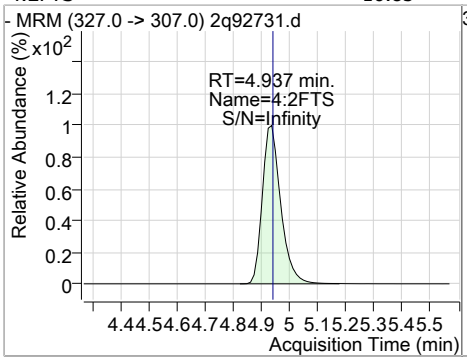


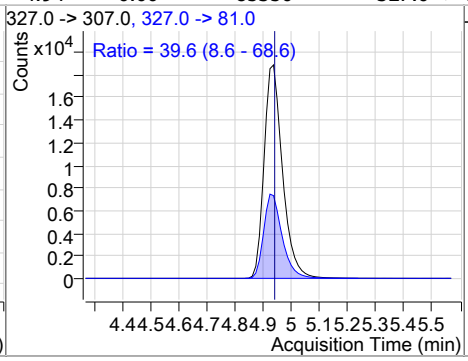


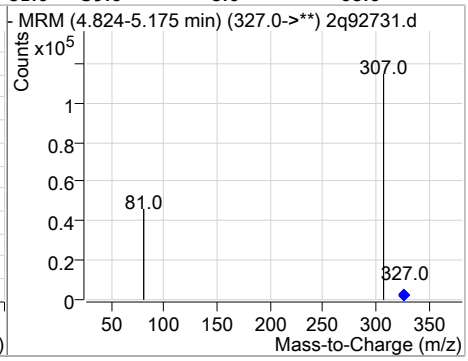


Perfluorinated Compounds by LC/MS/MS

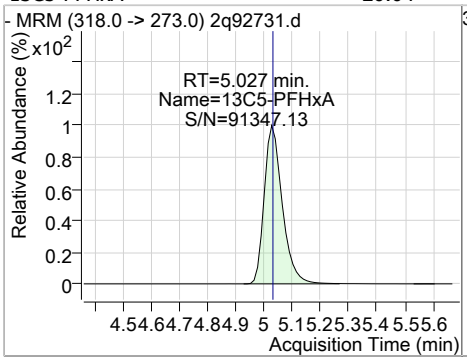
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	16.85	4.94	0.00	85356	327.0 -> 81.0	39.6	8.6	68.6

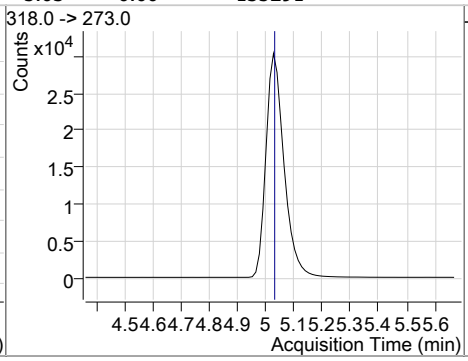


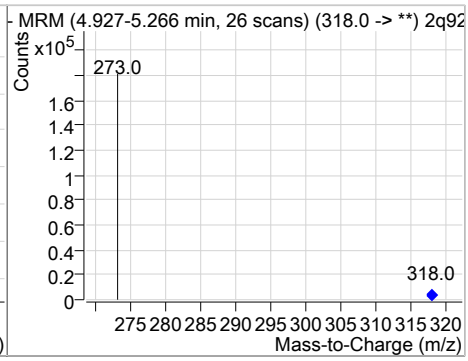




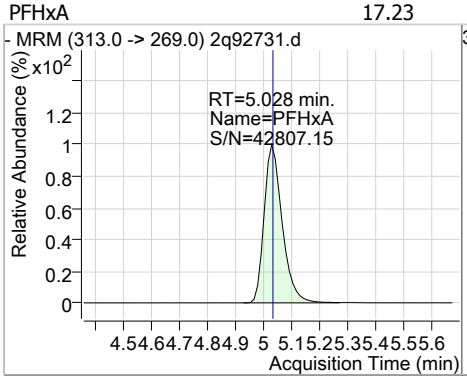
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.04	5.03	0.00	135291				

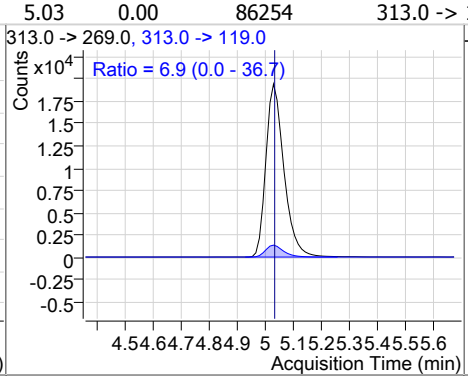


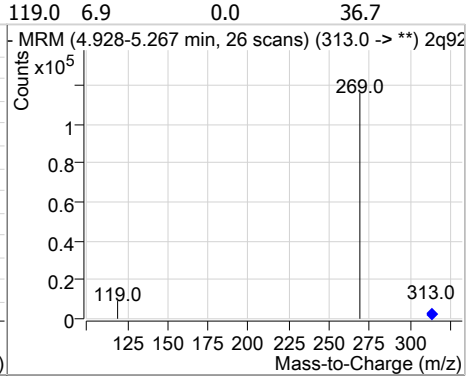




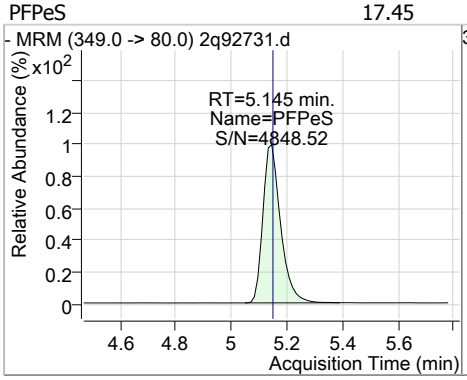
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	17.23	5.03	0.00	86254	313.0 -> 119.0	6.9	0.0	36.7

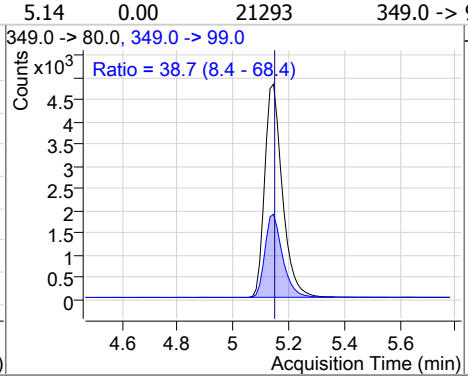


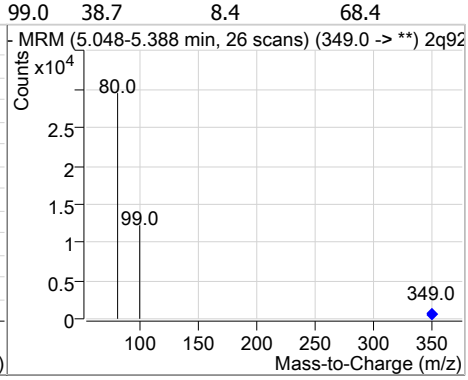




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.45	5.14	0.00	21293	349.0 -> 99.0	38.7	8.4	68.4

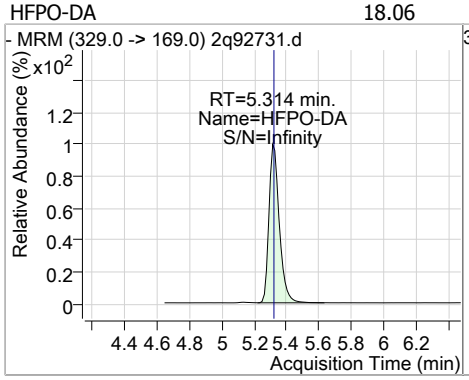


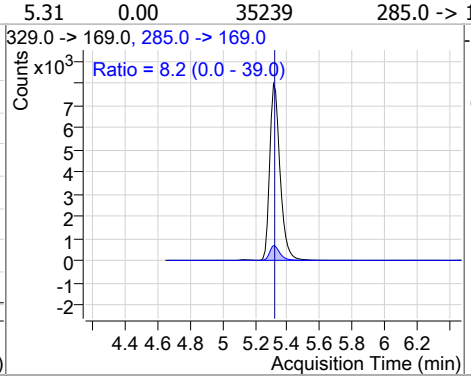


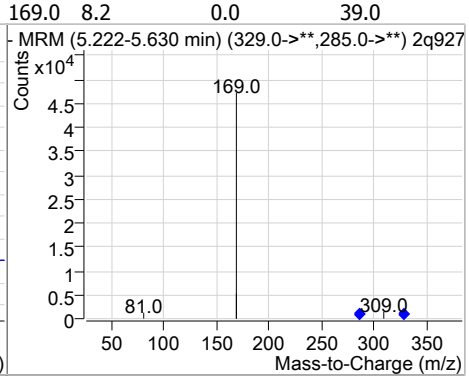


Perfluorinated Compounds by LC/MS/MS

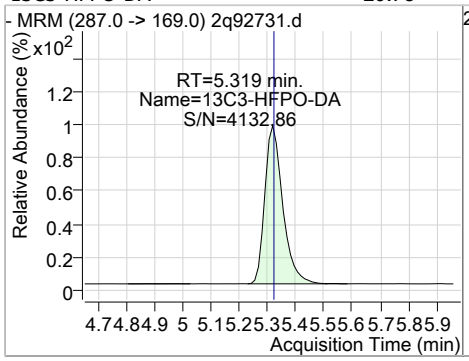
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.06	5.31	0.00	35239	285.0 -> 169.0	8.2	0.0	39.0

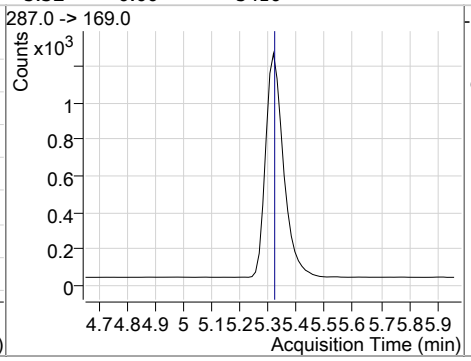


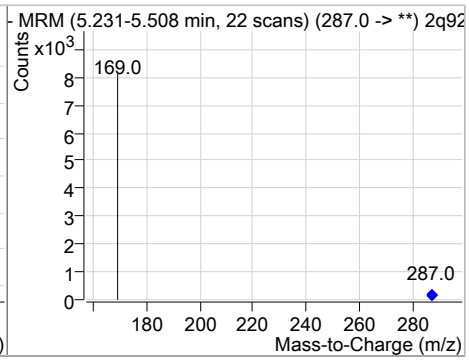




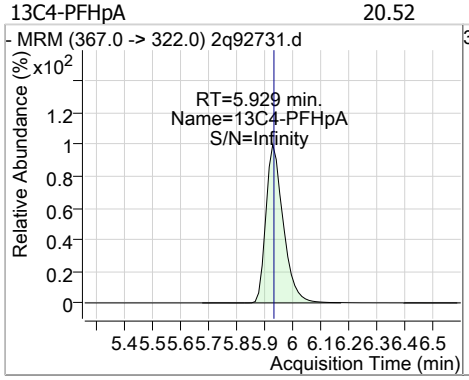
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	20.78	5.32	0.00	5410				

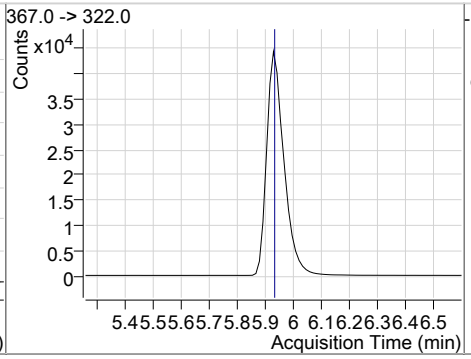


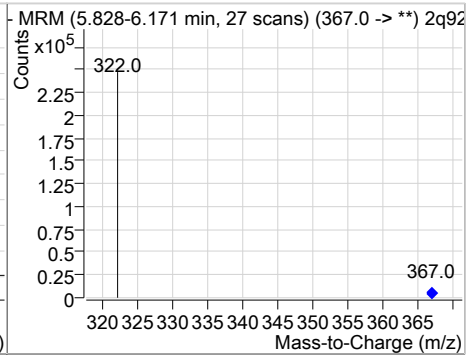




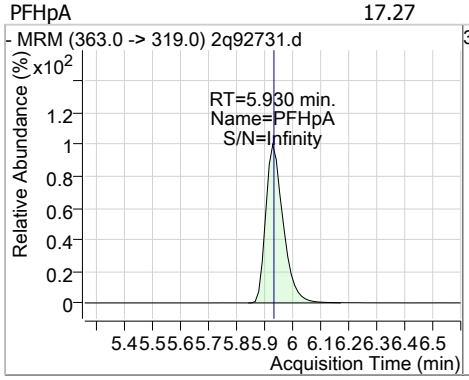
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.52	5.93	0.00	190540				

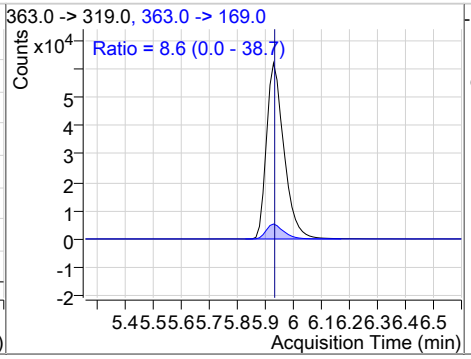


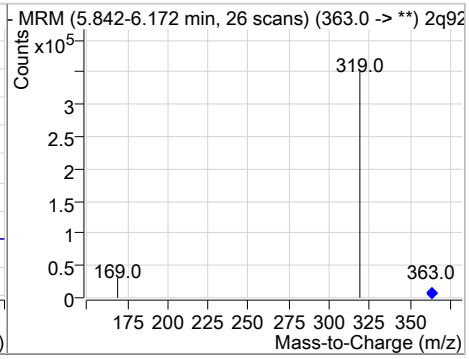




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.27	5.93	0.00	269102	363.0 -> 169.0	8.6	0.0	38.7

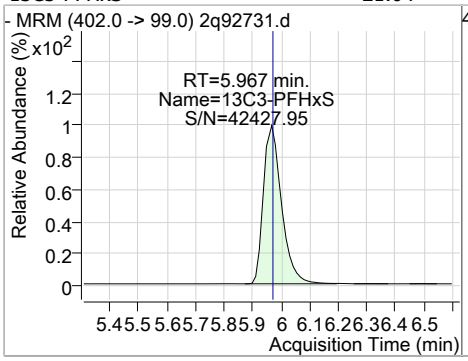


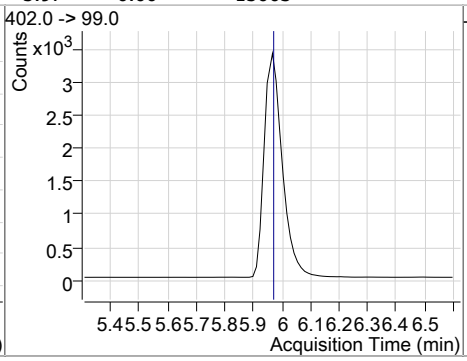


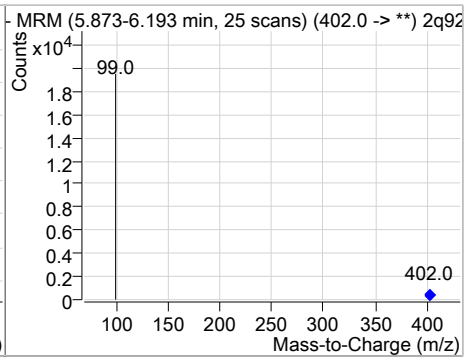


Perfluorinated Compounds by LC/MS/MS

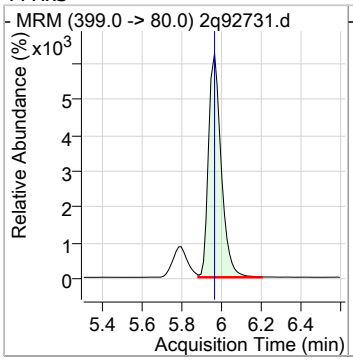
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.04	5.97	0.00	15003				

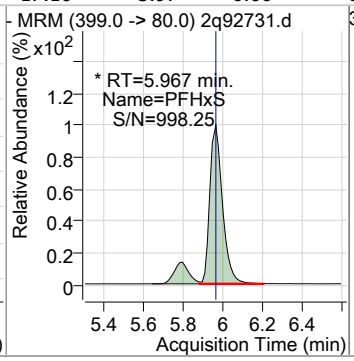


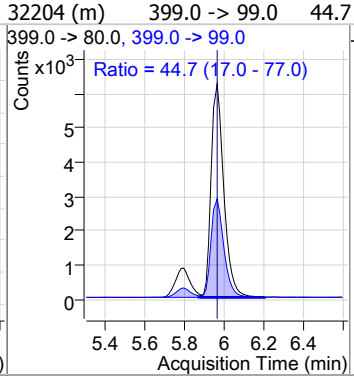


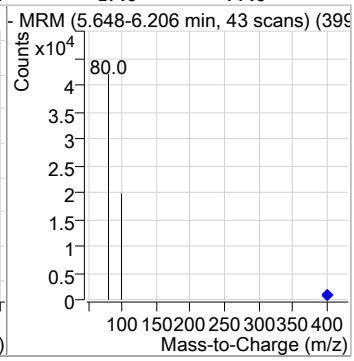


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.10	5.97	0.00	32204 (m)	399.0 -> 99.0	44.7	17.0	77.0

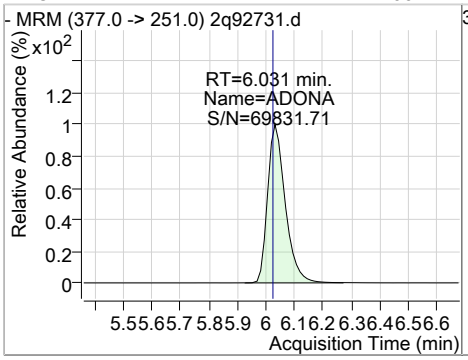


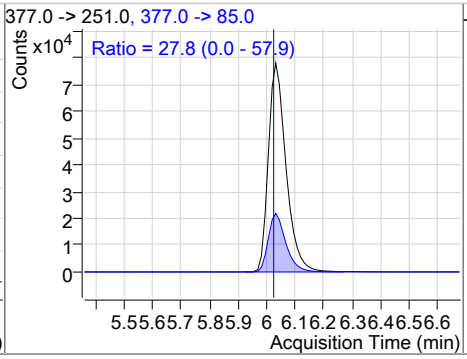


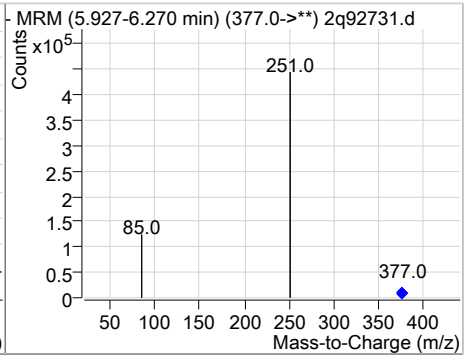




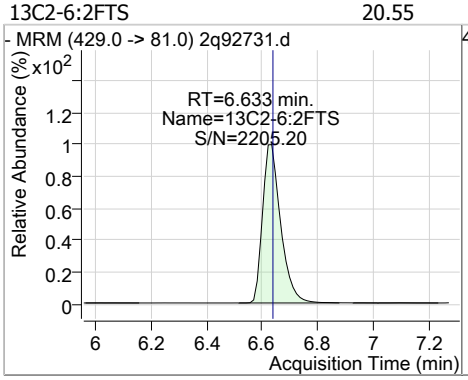
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	17.06	6.03	0.00	334103	377.0 -> 85.0	27.8	0.0	57.9

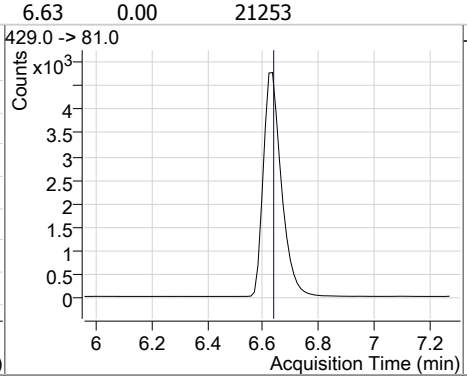


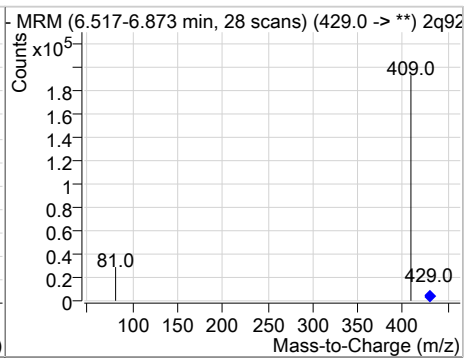




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.55	6.63	0.00	21253				

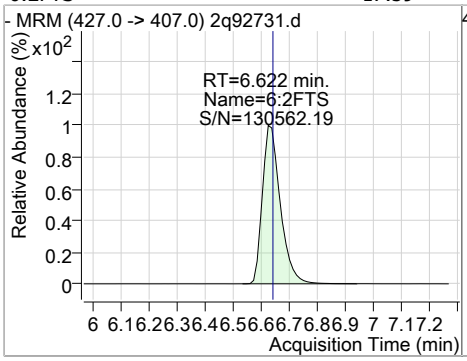


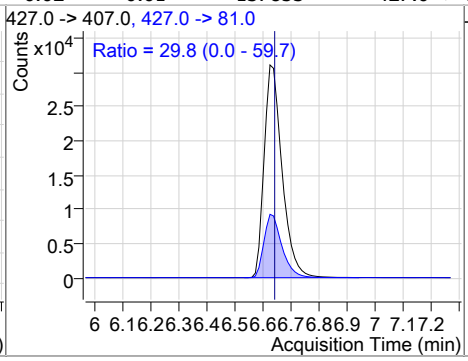


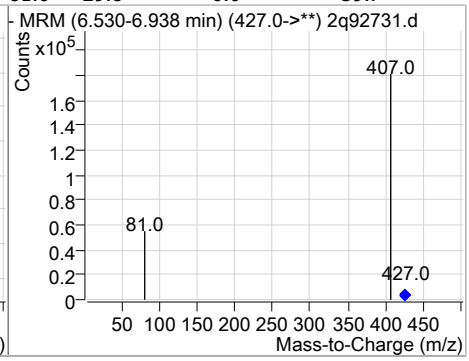


Perfluorinated Compounds by LC/MS/MS

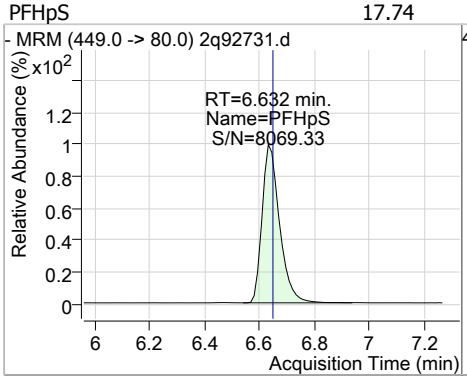
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.59	6.62	-0.01	137853	427.0 -> 81.0	29.8	0.0	59.7

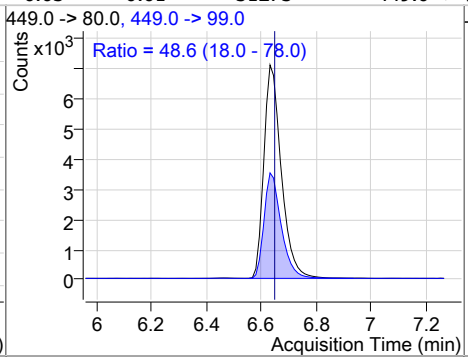


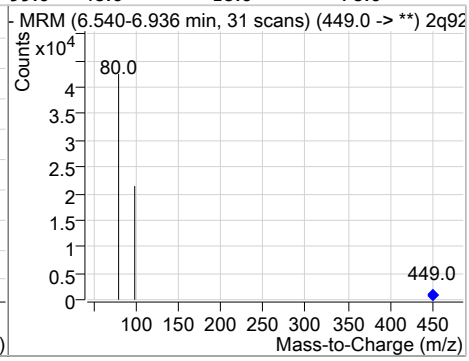




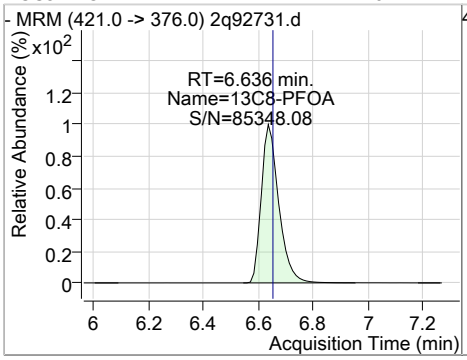
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	17.74	6.63	-0.01	31273	449.0 -> 99.0	48.6	18.0	78.0

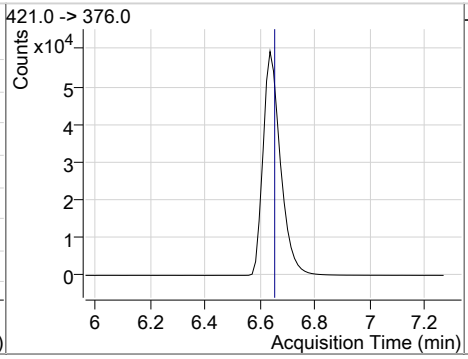


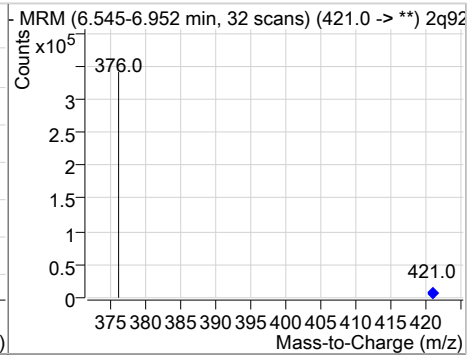




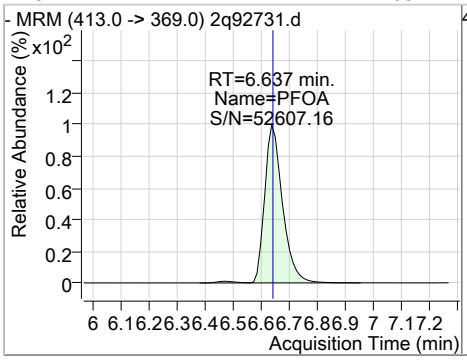
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.24	6.64	-0.01	260546				

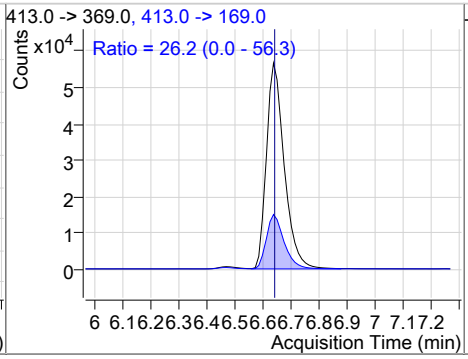


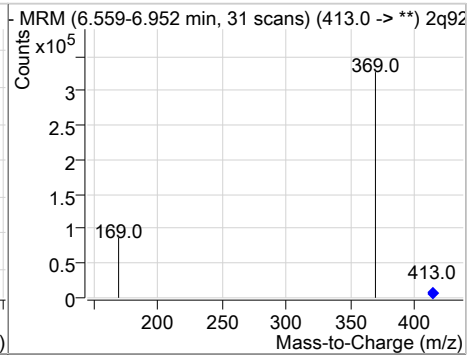




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.68	6.64	-0.01	250166	413.0 -> 169.0	26.2	0.0	56.3

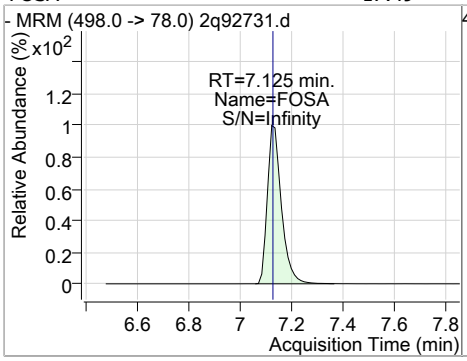


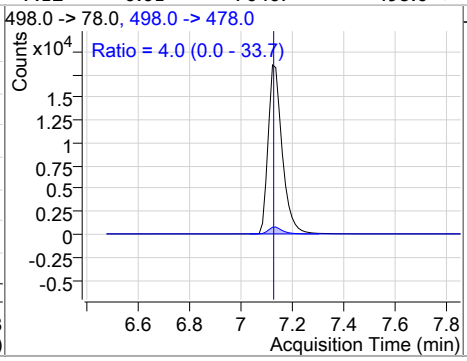


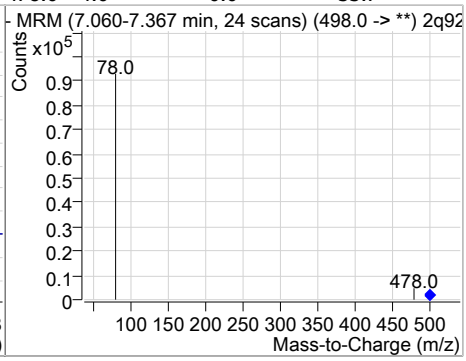


Perfluorinated Compounds by LC/MS/MS

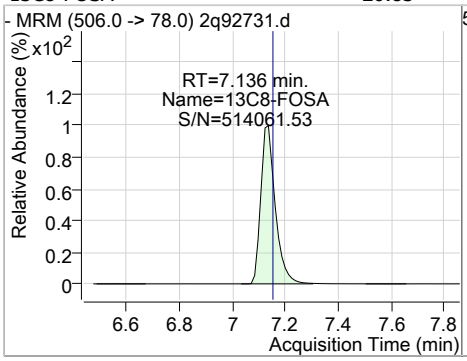
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	17.49	7.12	-0.01	70407	498.0 -> 478.0	4.0	0.0	33.7

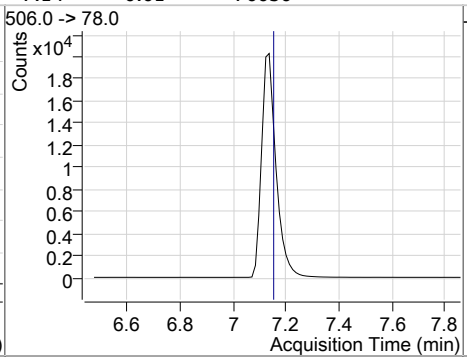


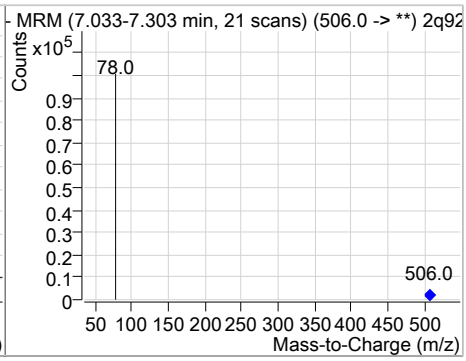




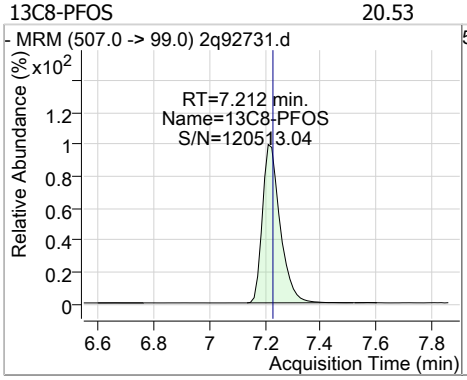
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.83	7.14	-0.01	76656				

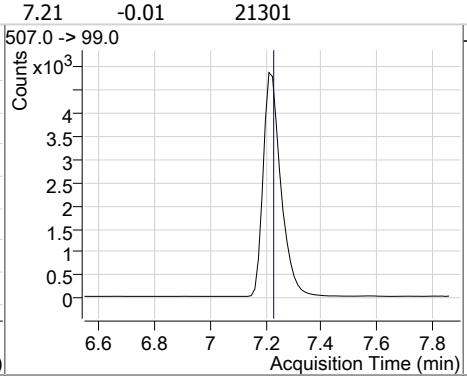


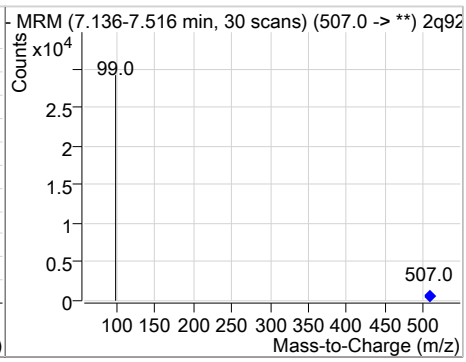




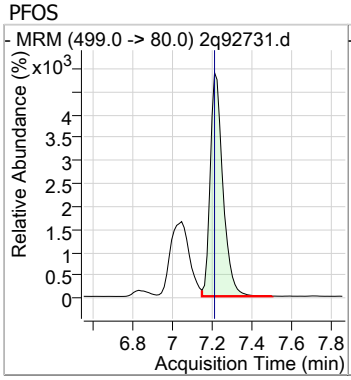
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.53	7.21	-0.01	21301				

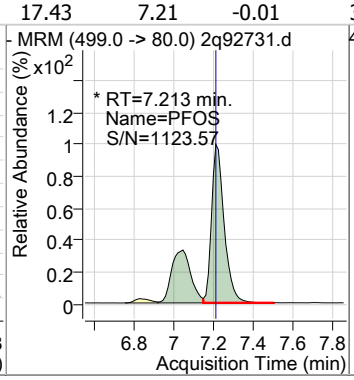


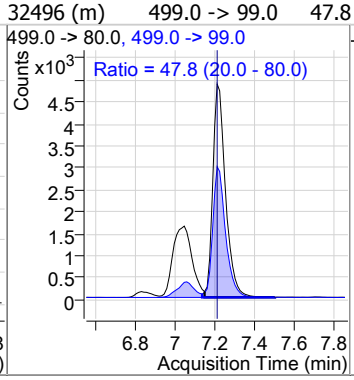


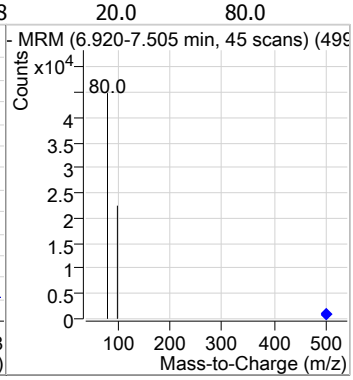


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.43	7.21	-0.01	32496 (m)	499.0 -> 99.0	47.8	20.0	80.0



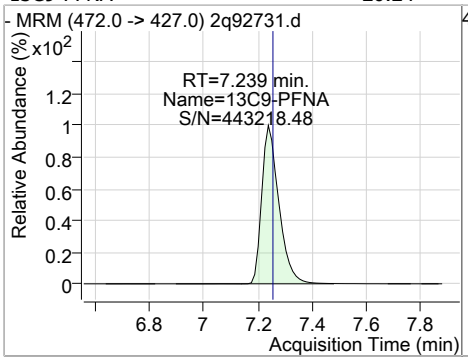


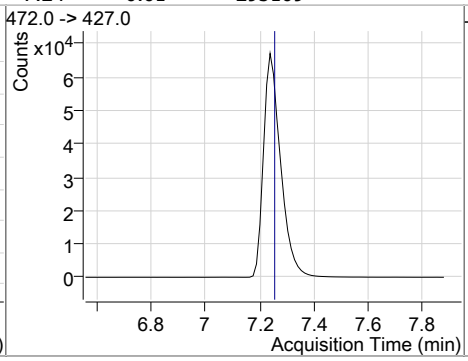


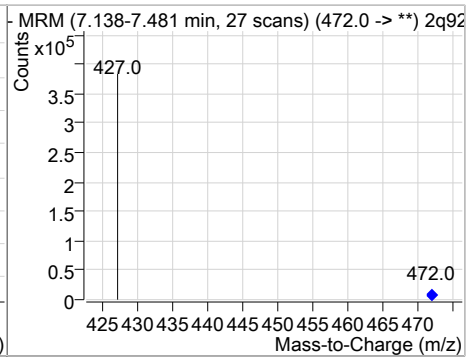


Perfluorinated Compounds by LC/MS/MS

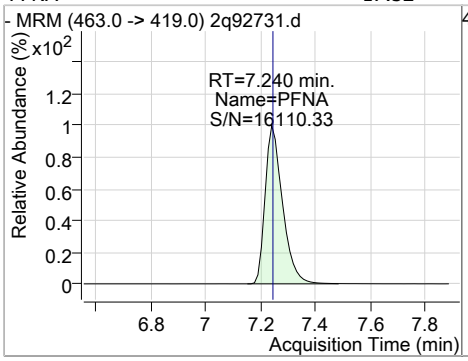
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.24	7.24	-0.01	295169				

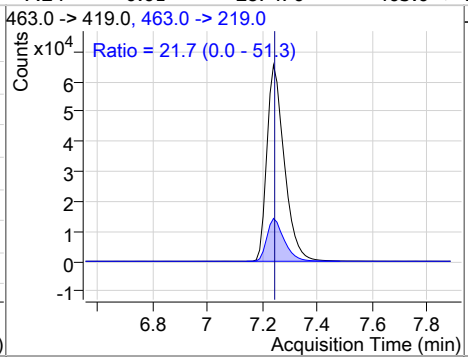


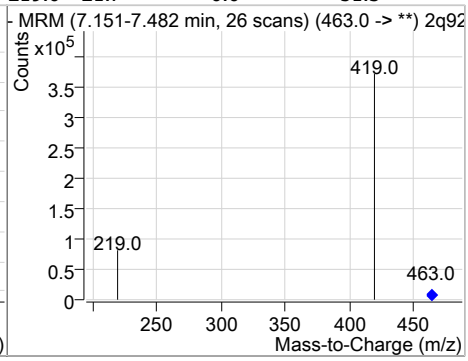




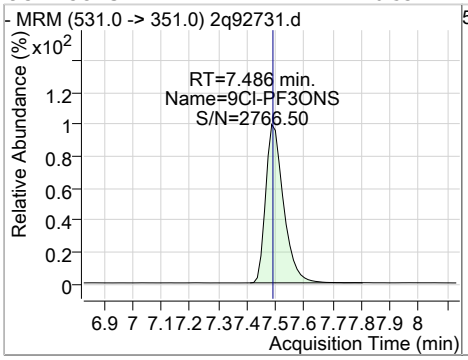
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.52	7.24	-0.01	287476	463.0 -> 219.0	21.7	0.0	51.3

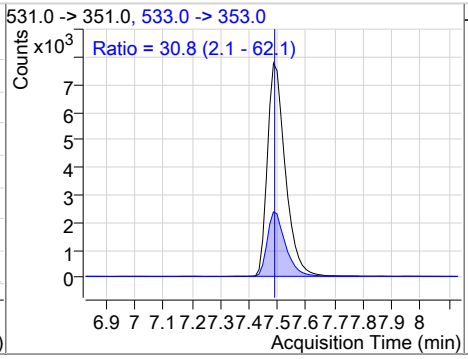


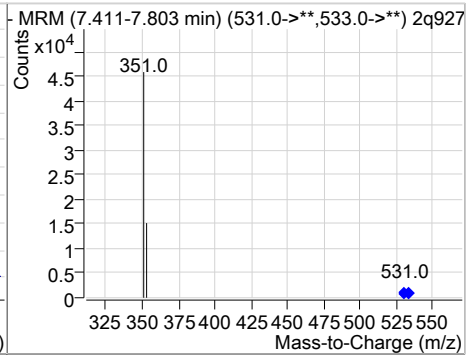




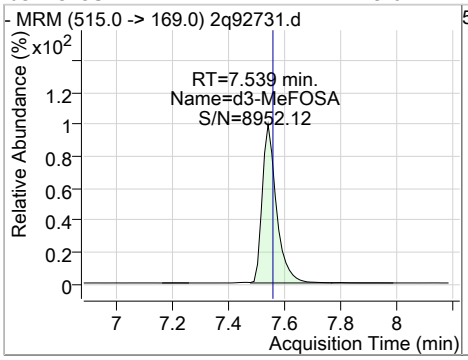
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	16.53	7.49	-0.01	33634	533.0 -> 353.0	30.8	2.1	62.1

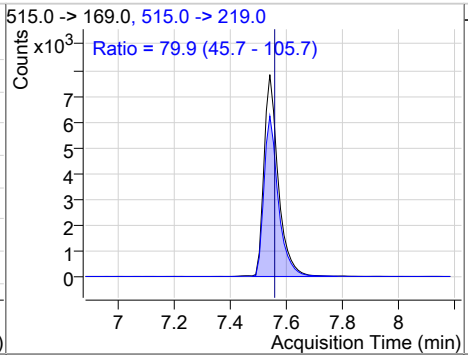


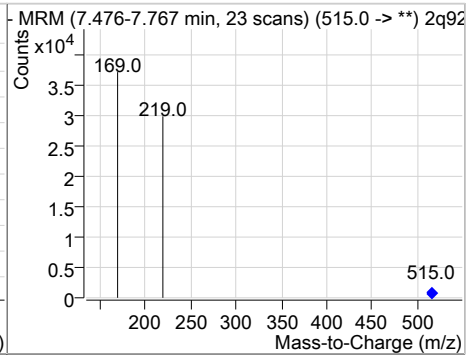




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	19.67	7.54	-0.01	27524	515.0 -> 219.0	79.9	45.7	105.7

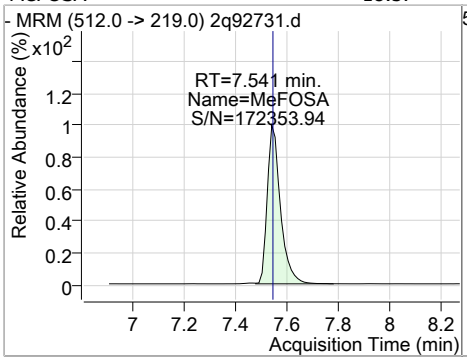


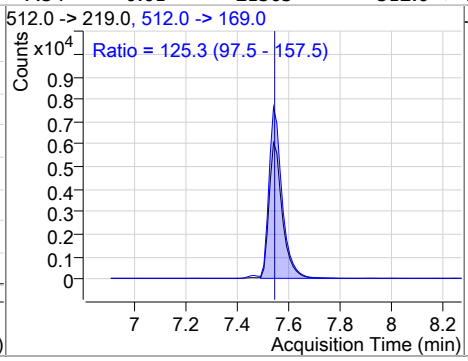


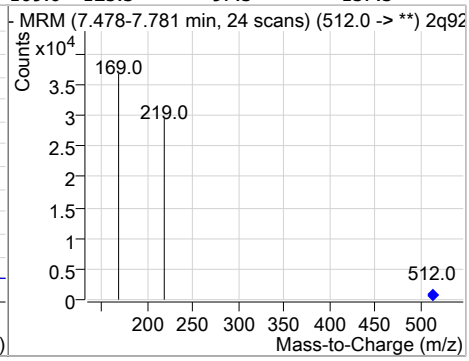


Perfluorinated Compounds by LC/MS/MS

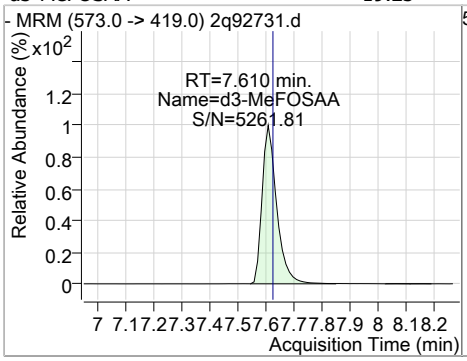
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.57	7.54	-0.01	21563	512.0 -> 169.0	125.3	97.5	157.5

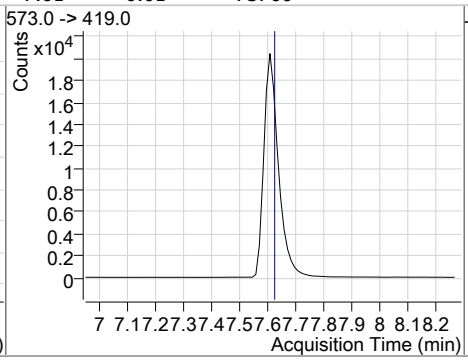


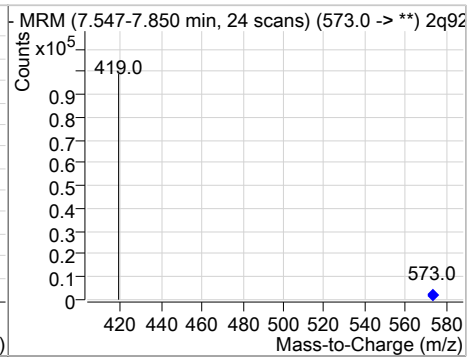




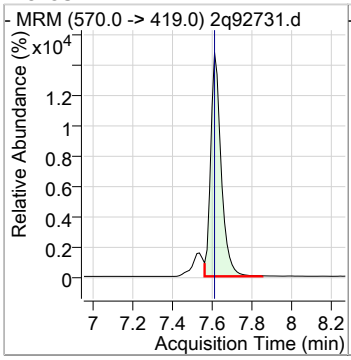
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.23	7.61	-0.01	73760				

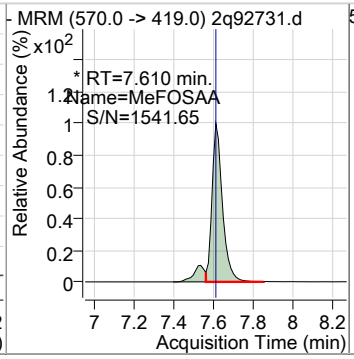


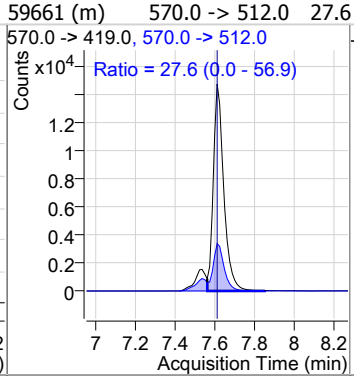


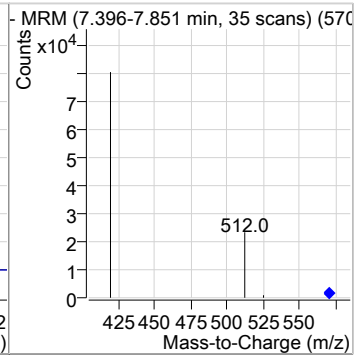


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.61	7.61	-0.01	59661 (m)	570.0 -> 512.0	27.6	0.0	56.9

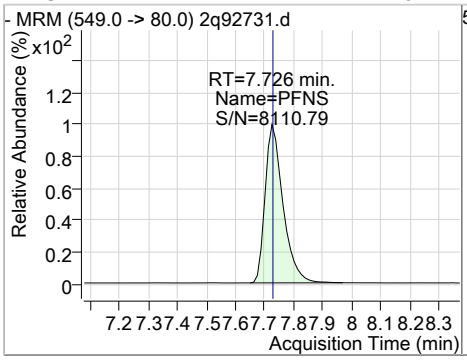


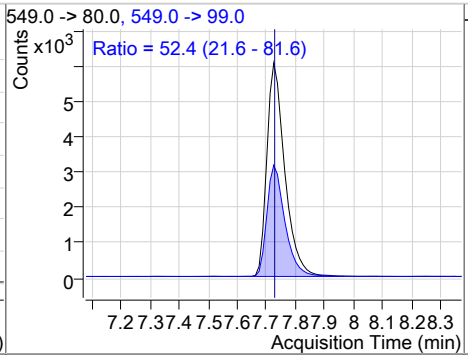


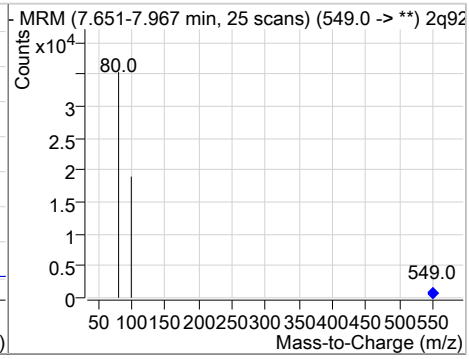




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.28	7.73	-0.01	25918	549.0 -> 99.0	52.4	21.6	81.6

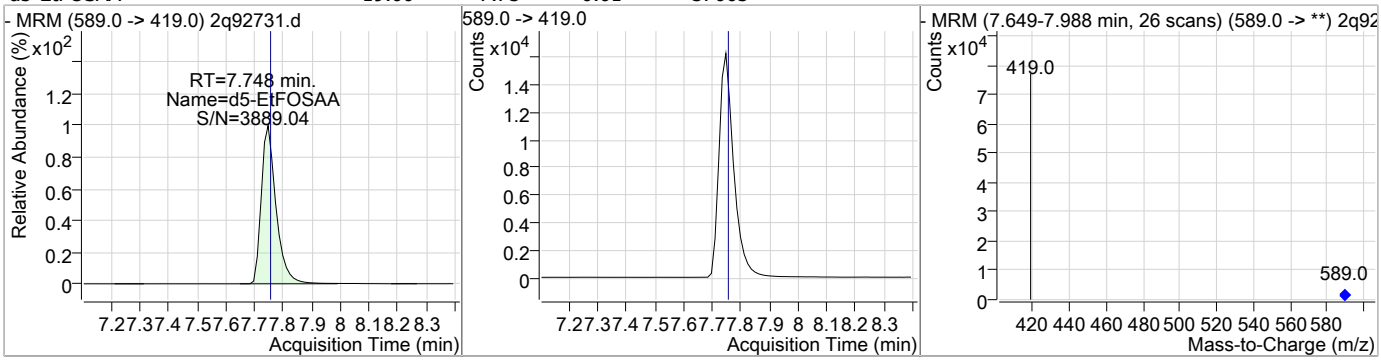




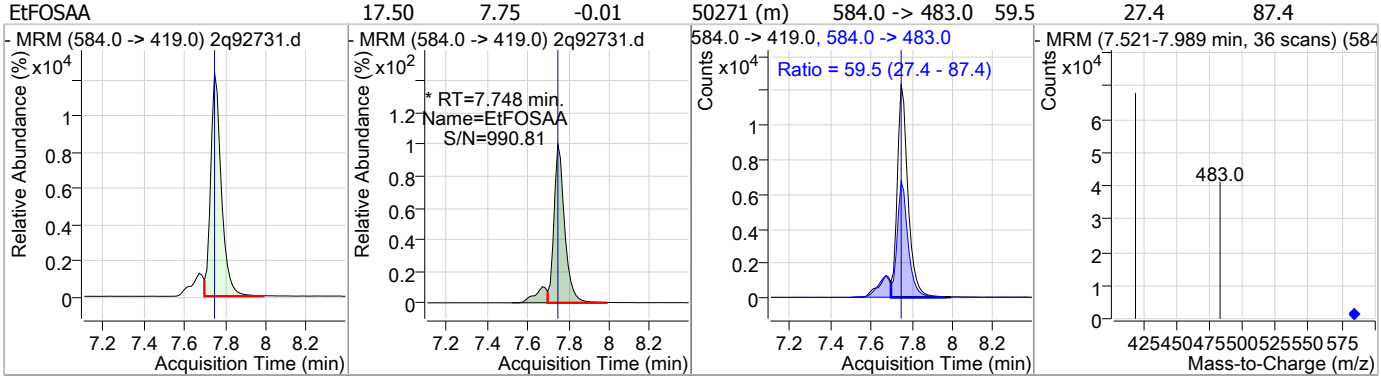


Perfluorinated Compounds by LC/MS/MS

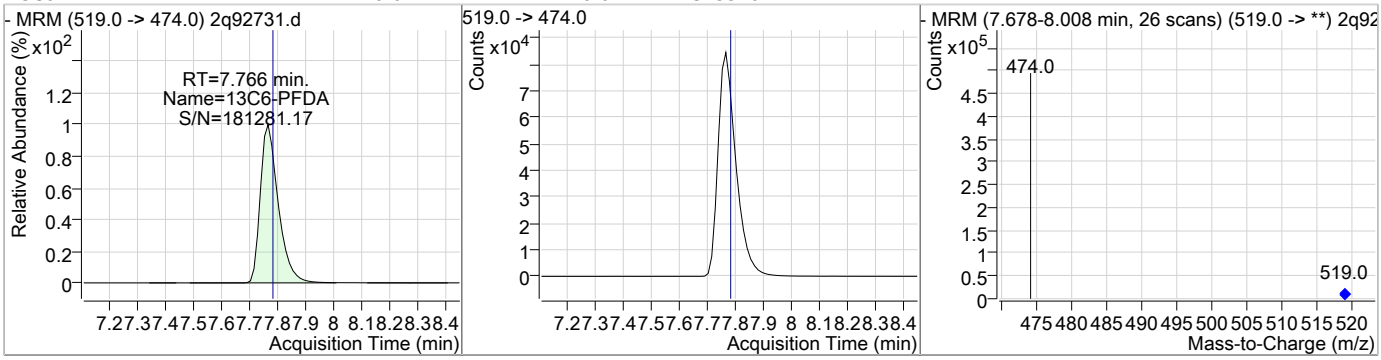
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	19.00	7.75	-0.01	57665				



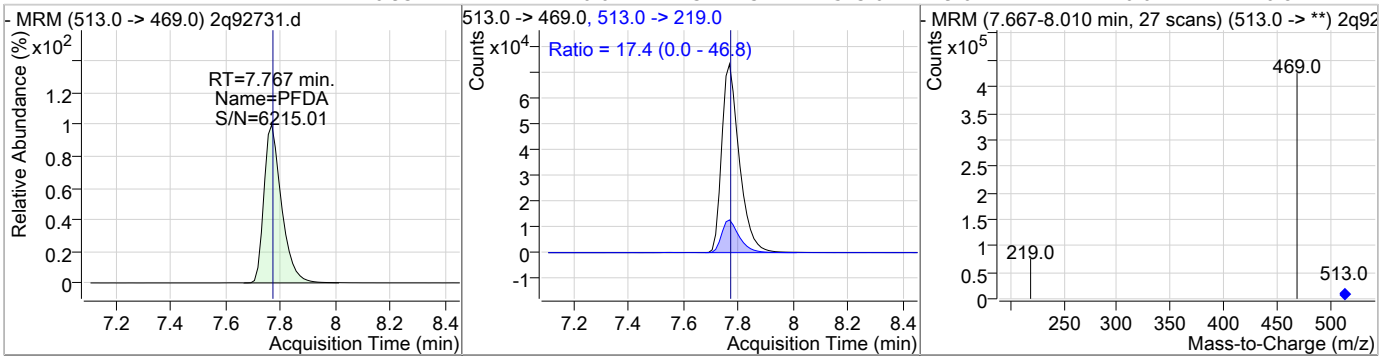
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.50	7.75	-0.01	50271 (m)	584.0 -> 483.0	59.5	27.4	87.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.62	7.77	-0.01	375546				

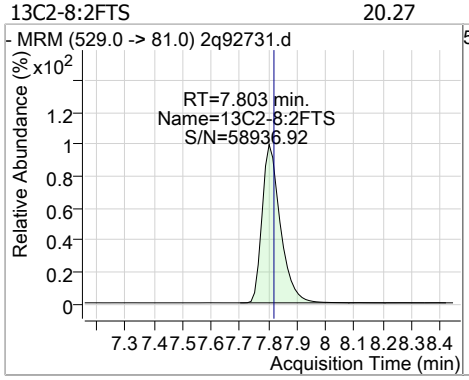


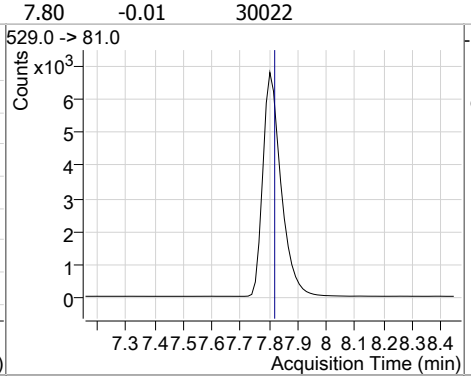
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	16.93	7.77	-0.01	322123	513.0 -> 219.0	17.4	0.0	46.8

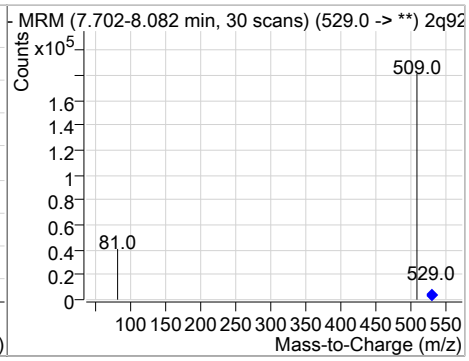


Perfluorinated Compounds by LC/MS/MS

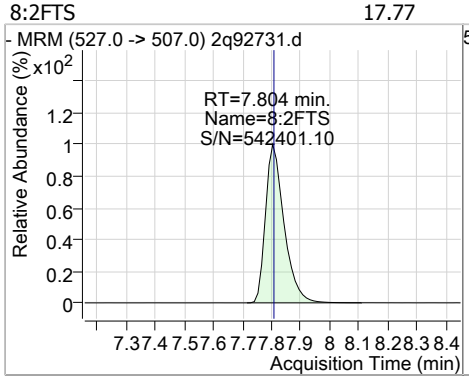
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.27	7.80	-0.01	30022				

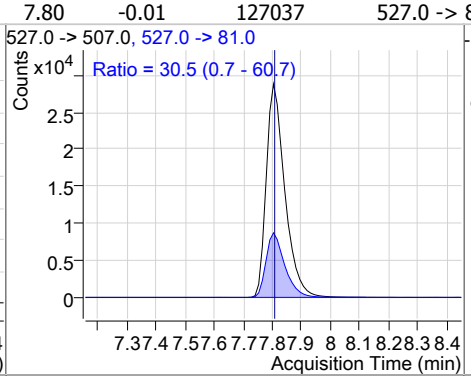


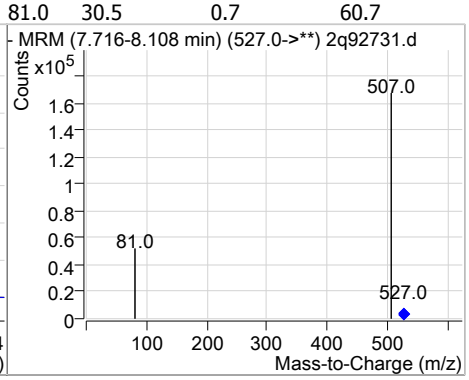




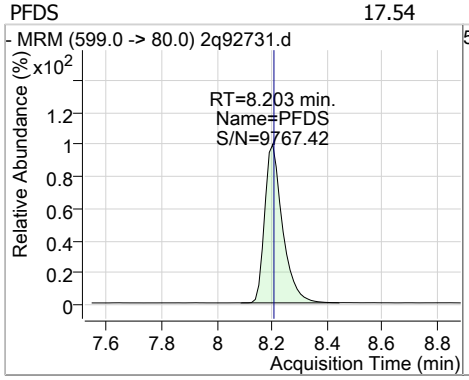
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	17.77	7.80	-0.01	127037	527.0 -> 81.0	30.5	0.7	60.7

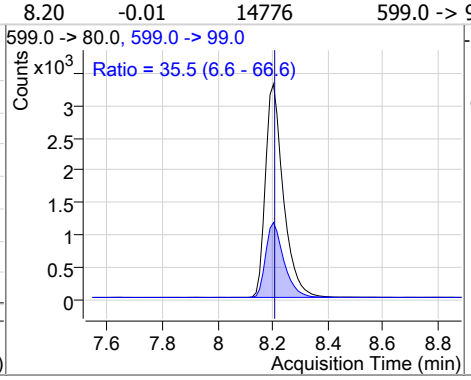


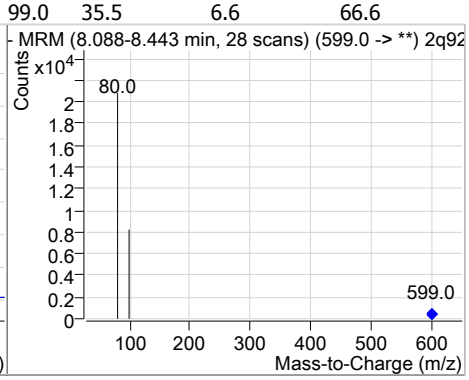




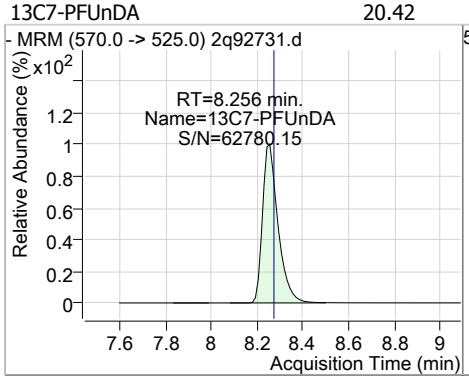
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	17.54	8.20	-0.01	14776	599.0 -> 99.0	35.5	6.6	66.6

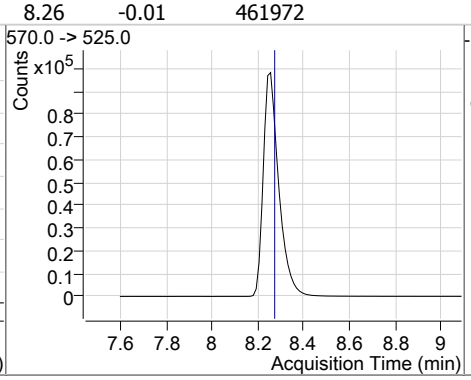


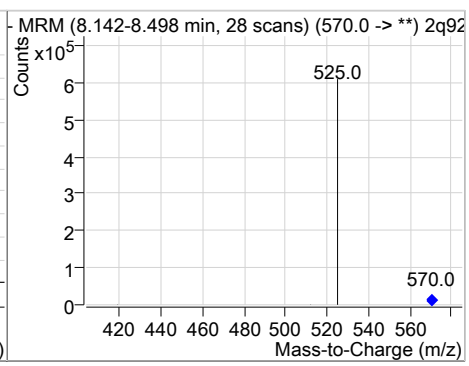




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.42	8.26	-0.01	461972				

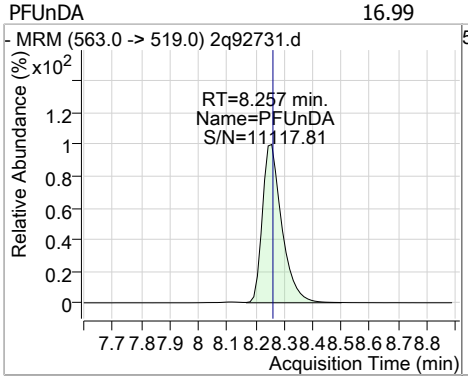


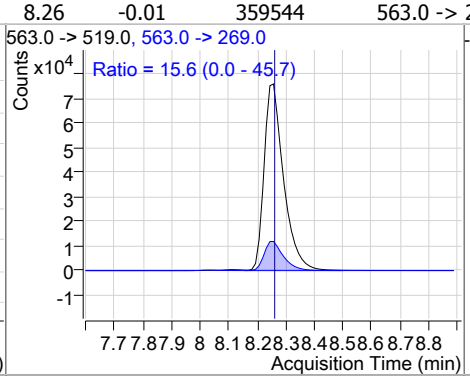


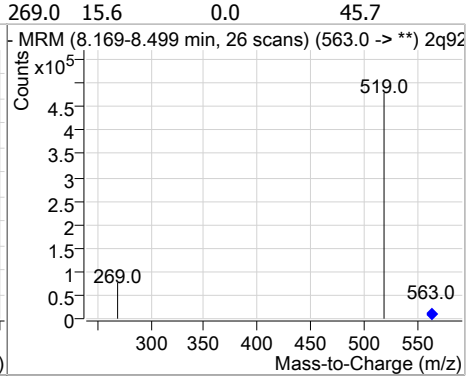


Perfluorinated Compounds by LC/MS/MS

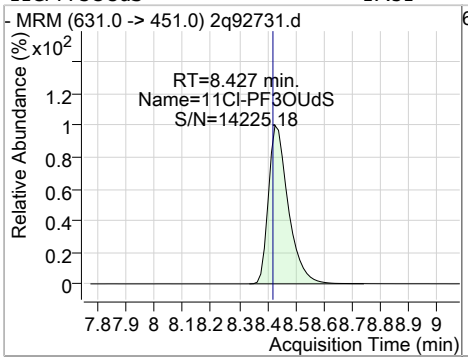
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	16.99	8.26	-0.01	359544	563.0 -> 269.0	15.6	0.0	45.7

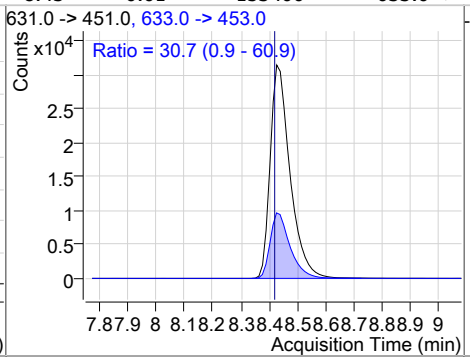


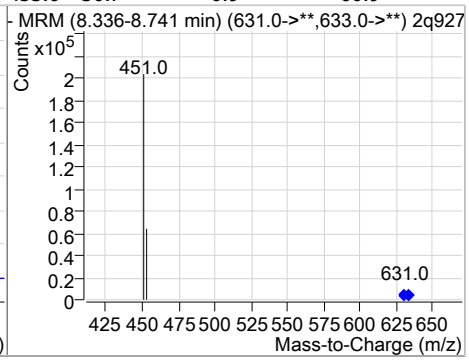




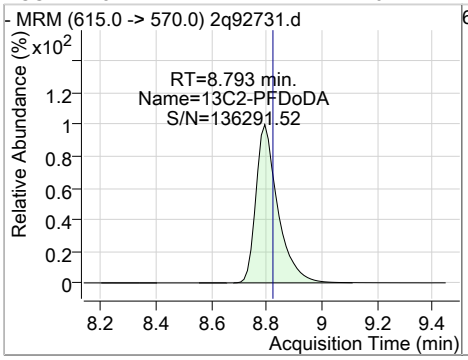
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.51	8.43	-0.01	153400	633.0 -> 453.0	30.7	0.9	60.9

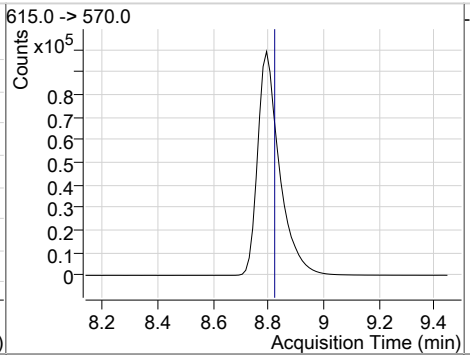


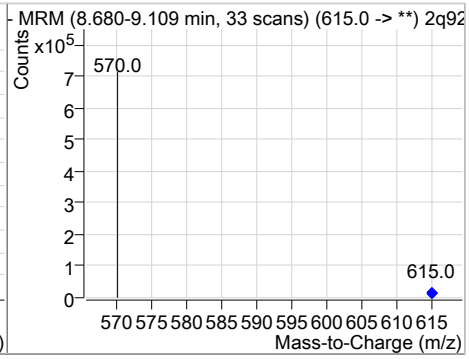




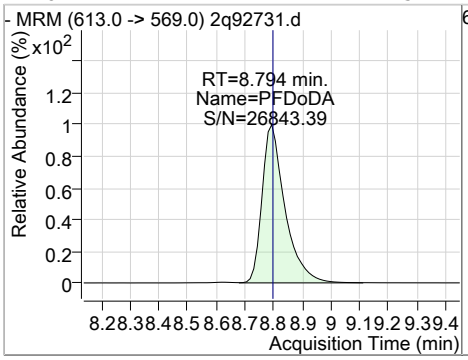
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.12	8.79	-0.03	543500				

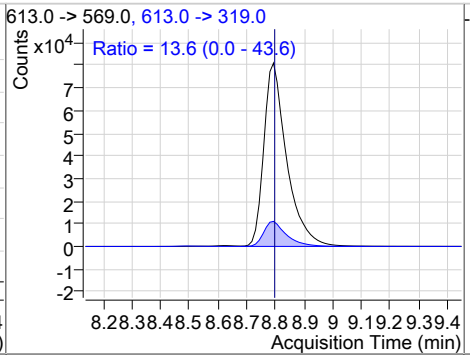


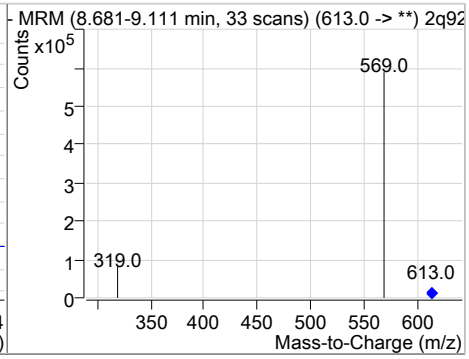




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	17.15	8.79	-0.03	447087	613.0 -> 319.0	13.6	0.0	43.6

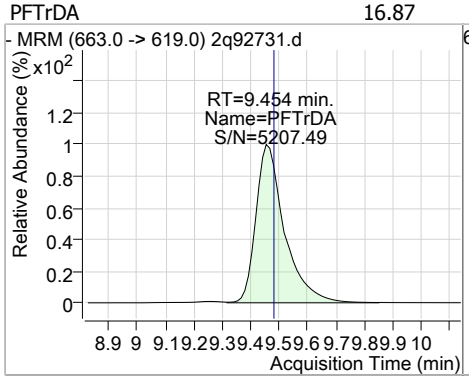


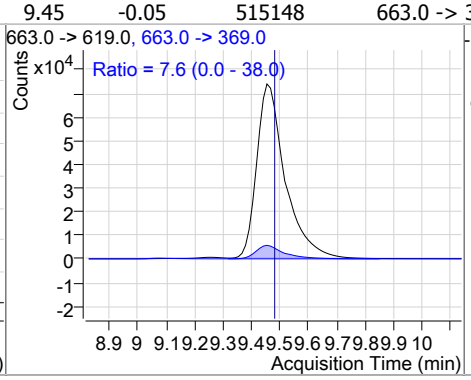


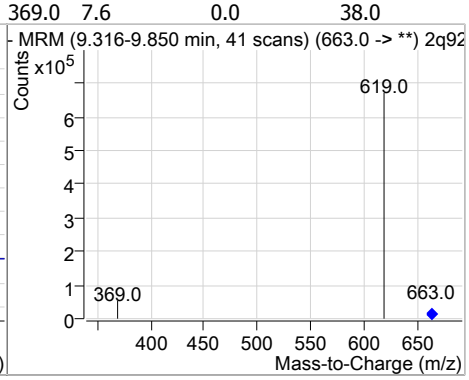


Perfluorinated Compounds by LC/MS/MS

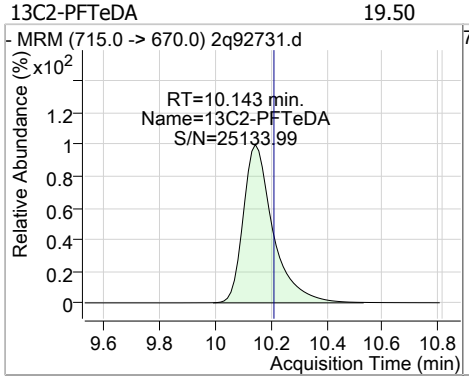
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	16.87	9.45	-0.05	515148	663.0 -> 369.0	7.6	0.0	38.0

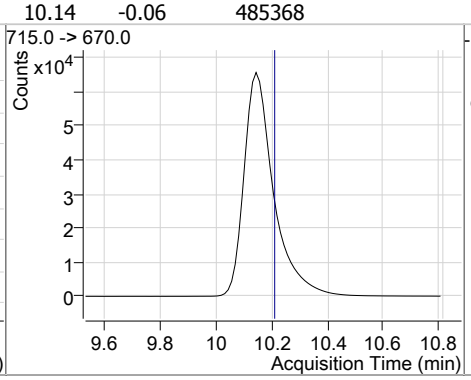


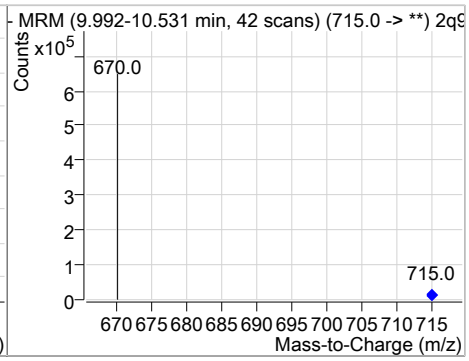




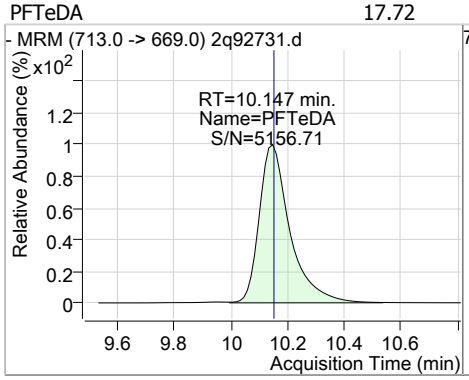
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.50	10.14	-0.06	485368				

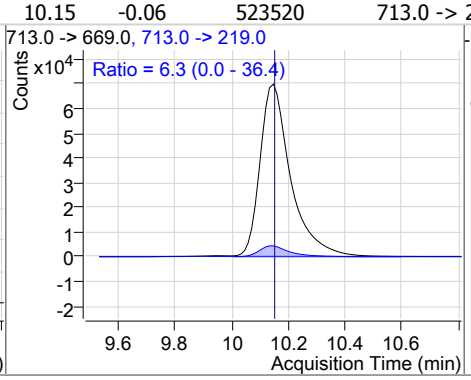


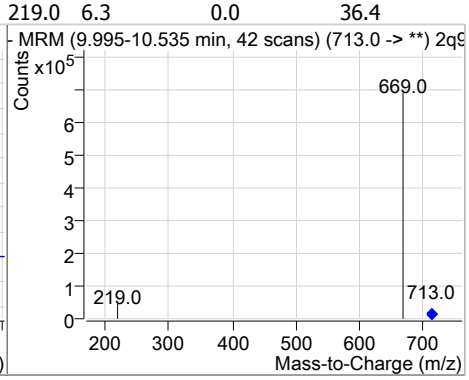




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.72	10.15	-0.06	523520	713.0 -> 219.0	6.3	0.0	36.4







Manual Integration Approval Summary

Sample Number: S2Q1298-ECC1287
Lab FileID: 2Q92731.D
Injection Time: 06/08/22 14:41
Method: EPA 537M QSM5.3 B-15
Analyst approved: 06/08/22 15:05 Natasha Gumtie
Supervisor approved: 06/08/22 15:51 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.21	Split peak
MeFOSAA	2355-31-9		7.61	Split peak
EtFOSAA	2991-50-6		7.75	Split peak

SGS ORLANDO

LCMS2-2Q ANALYSIS LOG

DATE:	05/26/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 ul
INSTRUMENT:	LCMS2-2Q

METHODS:	537MOD MS014 MS019
PROC. METH:	ID_050922_S2Q1274
CAL DATE:	05/24/22
ANALYST:	JB
RUN BATCH:	S2Q1287

ELUENT A LOT #:	216033 w/ 0.1% AA 194003
ELUENT B LOT #:	213527 w/0.1% AA 194003
IC/CC STD LOT #:	LCMS1873
ICV STD LOT #:	10947
ISTD/ID STD LOT #:	LCMS1882-C

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	2q91953.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
2	2q91954.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
3	2q91955.d	P1-A1	ic1287-0	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	✓
4	2q91956.d	P1-A2	ic1287-0.5	537_ID.m	Calibration	2.5/500	op91255,S2Q1287,250,,,1.0,1,water	✓
5	2q91957.d	P1-A3	ic1287-1	537_ID.m	Calibration	5/500	op91255,S2Q1287,250,,,1.0,1,water	✓
6	2q91958.d	P1-A4	ic1287-2	537_ID.m	Calibration	10/500	op91255,S2Q1287,250,,,1.0,1,water	✓
7	2q91959.d	P1-A5	ic1287-5	537_ID.m	Calibration	25/500	op91255,S2Q1287,250,,,1.0,1,water	✓
8	2q91960.d	P1-A6	ic1287-10	537_ID.m	Calibration	50/500	op91255,S2Q1287,250,,,1.0,1,water	✓
9	2q91961.d	P1-A7	icc1287-20	537_ID.m	Calibration	100/500	op91255,S2Q1287,250,,,1.0,1,water	✓
10	2q91962.d	P1-A8	ic1287-50	537_ID.m	Calibration	250/500	op91255,S2Q1287,250,,,1.0,1,water	✓
11	2q91963.d	P1-A9	ic1287-100	537_ID.m	Calibration	500	op91255,S2Q1287,250,,,1.0,1,water	✓
12	2q91964.d	P1-A1	iblk	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
13	2q91965.d	P1-B1	icv1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
14	2q91966.d	P1-B2	RT	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	Pass
15	2q91967.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	2	op91255,S2Q1287,250,,,1.0,1,water	Pass
16	2q91968.d	P3-C4	FA95503-1	537_ID.m	Sample	50/500	op91218,S2Q1287,2.11,,,1.0,10,soil	✓
17	2q91969.d	P3-C5	op91218-MS	537_ID.m	Sample	50/500	op91218,S2Q1287,2.03,,,1.0,10,soil	✓
18	2q91970.d	P3-C6	op91218-MSD	537_ID.m	Sample	50/500	op91218,S2Q1287,1.98,,,1.0,10,soil	✓
19	2q91971.d	P3-C7	FA95503-15	537_ID.m	Sample	50/500	op91218,S2Q1287,2.07,,,1.0,10,soil	✓
20	2q91972.d	P3-C8	FA95503-17	537_ID.m	Sample	50/500	op91218,S2Q1287,1.98,,,1.0,10,soil	✓
21	2q91973.d	P3-C9	FA95503-18	537_ID.m	Sample	50/500	op91218,S2Q1287,2.00,,,1.0,10,soil	RR 1x
22	2q91974.d	P3-D1	FA95543-19	537_ID.m	Sample	50/500	op91224,S2Q1287,2.01,,,1.0,10,soil	✓
23	2q91975.d	P3-D2	FA95543-22	537_ID.m	Sample	100/500	op91224,S2Q1287,2.99,,,1.0,5,soil	✓
24	2q91976.d	P2-C6	FA95543-23	537_ID.m	Sample		op91224,S2Q1287,2.04,,,1.0,1,soil	✓
25	2q91977.d	P3-D3	FA95543-25	537_ID.m	Sample	100/500	op91224,S2Q1287,2.00,,,1.0,5,soil	✓
26	2q91978.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
27	2q91979.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
28	2q91980.d	P2-C9	FA95543-26	537_ID.m	Sample		op91224,S2Q1287,1.98,,,1.0,1,soil	✓
29	2q91981.d	P3-D4	FA95543-26	537_ID.m	Sample	50/500	op91224,S2Q1287,1.98,,,1.0,10,soil	✓
30	2q91982.d	P3-D5	FA95543-27	537_ID.m	Sample	100/500	op91224,S2Q1287,2.14,,,1.0,5,soil	✓
31	2q91983.d	P3-D6	FA95605-10	537_ID.m	Sample	100/500	op91224,S2Q1287,1.99,,,1.0,5,soil	✓
32	2q91984.d	P2-D4	FA95605-11	537_ID.m	Sample		op91224,S2Q1287,2.10,,,1.0,1,soil	✓
33	2q91985.d	P2-D5	FA95605-14	537_ID.m	Sample		op91224,S2Q1287,2.05,,,1.0,1,soil	✓
34	2q91986.d	P2-D6	FA95605-16	537_ID.m	Sample		op91224,S2Q1287,2.04,,,1.0,1,soil	✓

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LCMS2-2Q ANALYSIS LOG

35	2q91987.d	P2-D7	FA95605-17	537_ID.m	Sample		op91224,S2Q1287,1.98,,,1.0,1,soil	RR 5x Low istd
36	2q91988.d	P2-D8	FA95605-18	537_ID.m	Sample		op91224,S2Q1287,2.14,,,1.0,1,soil	RR 5x Low istd
37	2q91989.d	P2-D9	FA95605-19	537_ID.m	Sample		op91224,S2Q1287,2.00,,,1.0,1,soil	RR 5x Low istd
38	2q91990.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
39	2q91991.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
40	2q91992.d	P2-E1	FA95543-18	537_ID.m	Sample		op91224,S2Q1287,2.04,,,1.0,1,soil	✓
41	2q91993.d	P2-E2	op91224-MS	537_ID.m	Sample		op91224,S2Q1287,1.99,,,1.0,1,soil	✓
42	2q91994.d	P2-E3	op91224-MSD	537_ID.m	Sample		op91224,S2Q1287,2.10,,,1.0,1,soil	✓
43	2q91995.d	P2-E4	FA95543-19	537_ID.m	Sample		op91224,S2Q1287,2.01,,,1.0,1,soil	✓
44	2q91996.d	P2-E5	op91224-MS2	537_ID.m	Sample	50/500	op91224,S2Q1287,2.05,,,1.0,10,soil	✓
45	2q91997.d	P2-E6	op91224-MSD2	537_ID.m	Sample	50/500	op91224,S2Q1287,2.00,,,1.0,10,soil	✓
46	2q91998.d	P2-B5	op95503-16	537_ID.m	Sample		op91218,S2Q1287,2.00,,,1.0,1,soil	✓
47	2q91999.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
48	2q92000.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
49	2q92001.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
50	2q92002.d	P2-E7	op91228-BS	537_ID.m	Sample		op91228,S2Q1287,2.00,,,1.0,1,soil	Pass
51	2q92003.d	P2-E8	op91228-MB	537_ID.m	Sample		op91228,S2Q1287,2.00,,,1.0,1,soil	ND
52	2q92004.d	P2-E9	FA95597-1	537_ID.m	Sample		op91228,S2Q1287,2.00,,,1.0,1,soil	✓
53	2q92005.d	P2-F1	op91228-MS	537_ID.m	Sample		op91228,S2Q1287,2.07,,,1.0,1,soil	✓
54	2q92006.d	P2-F2	op91228-MSD	537_ID.m	Sample		op91228,S2Q1287,2.02,,,1.0,1,soil	✓
55	2q92007.d	P2-F3	FA95597-2	537_ID.m	Sample		op91228,S2Q1287,2.11,,,1.0,1,soil	RR 5x Low istd
56	2q92008.d	P2-F4	FA95597-3	537_ID.m	Sample		op91228,S2Q1287,2.01,,,1.0,1,soil	✓
57	2q92009.d	P2-F5	FA95597-4	537_ID.m	Sample		op91228,S2Q1287,2.03,,,1.0,1,soil	✓
58	2q92010.d	P2-F6	FA95597-5	537_ID.m	Sample		op91228,S2Q1287,2.00,,,1.0,1,soil	✓
59	2q92011.d	P2-F7	FA95671-2	537_ID.m	Sample		op91228,S2Q1287,2.02,,,1.0,1,soil	✓
60	2q92012.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
61	2q92013.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
62	2q92014.d	P2-F8	FA95671-4	537_ID.m	Sample		op91228,S2Q1287,2.00,,,1.0,1,soil	✓
63	2q92015.d	P2-F9	FA95671-6	537_ID.m	Sample		op91228,S2Q1287,2.01,,,1.0,1,soil	✓
64	2q92016.d	P3-A1	FA95673-2	537_ID.m	Sample		op91228,S2Q1287,2.07,,,1.0,1,soil	✓
65	2q92017.d	P3-A2	FA95673-4	537_ID.m	Sample		op91228,S2Q1287,2.02,,,1.0,1,soil	✓
66	2q92018.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
67	2q92019.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
68	2q92020.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
69	2q92021.d	P3-A3	op91258-BS	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	Pass
70	2q92022.d	P3-A4	op91258-MB	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	ND
71	2q92023.d	P3-A5	FA95492-1	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
72	2q92024.d	P3-A6	op91258-MS1	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
73	2q92025.d	P3-A7	op91258-MSD1	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
74	2q92026.d	P3-A8	FA95492-2	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
75	2q92027.d	P3-A9	FA95492-3	537_ID.m	Sample		op91258,S2Q1287,110,,,1.0,1,water	✓
76	2q92028.d	P3-B1	FA95492-4	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓

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77	2q92029.d	P3-B2	FA95494-1	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	RR 10x E
78	2q92030.d	P3-B3	FA95494-2	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
79	2q92031.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
80	2q92032.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND
81	2q92033.d	P3-B4	op91258-MS2	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
82	2q92034.d	P3-B5	op91258-MSD2	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
83	2q92035.d	P3-B6	FA95494-3	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
84	2q92036.d	P3-B7	FA95494-4	537_ID.m	Sample		op91258,S2Q1287,120,,,1.0,1,water	✓
85	2q92037.d	P3-B8	FA95494-5	537_ID.m	Sample		op91258,S2Q1287,125,,,1.0,1,water	✓
86	2q92038.d	P3-B9	FA95494-6	537_ID.m	Sample		op91258,S2Q1287,120,,,1.0,1,water	✓
87	2q92039.d	P3-C1	FA95494-7	537_ID.m	Sample		op91258,S2Q1287,120,,,1.0,1,water	✓
88	2q92040.d	P3-C2	FA95494-8	537_ID.m	Sample		op91258,S2Q1287,120,,,1.0,1,water	✓
89	2q92041.d	P3-C3	FA95494-9	537_ID.m	Sample		op91258,S2Q1287,120,,,1.0,1,water	✓
90	2q92042.d	P3-D7	FA95494-1	537_ID.m	Sample	50/500	op91258,S2Q1287,125,,,1.0,10,water	✓
91	2q92043.d	P1-A7	ecc1287-20	537_ID.m	QC	100/500	op91255,S2Q1287,250,,,1.0,1,water	Pass
92	2q92044.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1287,250,,,1.0,1,water	ND

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LCMS2-2Q ANALYSIS LOG

DATE:	06/02/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 ul
INSTRUMENT:	LCMS2-2Q

METHODS:	537MOD MS014 MS019
PROC. METH:	ID_050922_S2Q1287
CAL DATE:	05/09/22
ANALYST:	JB
RUN BATCH:	S2Q1293

ELUENT A LOT #:	216033 w/ 0.1% AA 194003
ELUENT B LOT #:	213527 w/0.1% AA 194003
IC/CC STD LOT #:	LCMS1873
ICV STD LOT #:	10947
ISTD/ID STD LOT #:	LCMS1882-C

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	2q92301.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND
2	2q92302.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND
3	2q92303.d	P1-B2	RT	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	Pass
4	2q92304.d	P1-A9	High Standard	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	Pass
5	2q92305.d	P1-A1	iblk	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND
6	2q92306.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1293,250,,,1.0,1,water	Pass
7	2q92307.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1293,250,,,1.0,1,water	Pass
8	2q92308.d	P6-A1	op91428-BS	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	Pass
9	2q92309.d	P6-A2	op91428-MB	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	ND
10	2q92310.d	P6-A3	FA95730-1	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
11	2q92311.d	P6-A4	FA95730-2	537_ID.m	Sample		op91428,S2Q1293,120,,,1.0,1,water	✓
12	2q92312.d	P6-A5	FA95730-3	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
13	2q92313.d	P6-A6	FA95730-4	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
14	2q92314.d	P6-A7	FA95730-5	537_ID.m	Sample		op91428,S2Q1293,120,,,1.0,1,water	✓
15	2q92315.d	P6-A8	FA95730-6	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
16	2q92316.d	P6-A9	FA95730-7	537_ID.m	Sample		op91428,S2Q1293,120,,,1.0,1,water	RR 5x Low istd
17	2q92317.d	P6-B1	FA95731-2	537_ID.m	Sample		op91428,S2Q1293,120,,,1.0,1,water	RR 5x Low istd
18	2q92318.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1293,250,,,1.0,1,water	Pass
19	2q92319.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND
20	2q92320.d	P6-B2	FA95731-3	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
21	2q92321.d	P6-B3	FA95731-4	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
22	2q92322.d	P6-B4	FA95731-5	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
23	2q92323.d	P6-B5	FA95731-6	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
24	2q92324.d	P6-B6	FA95742-1	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
25	2q92325.d	P6-B7	op91428-MS	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
26	2q92326.d	P6-B8	FA95742-2	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
27	2q92327.d	P6-B9	op91428-DUP	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
28	2q92328.d	P6-C1	FA95742-3	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
29	2q92329.d	P6-C2	FA95742-4	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	RR 5x Low istd
30	2q92330.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1293,250,,,1.0,1,water	Pass
31	2q92331.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND
32	2q92332.d	P6-C3	FA95742-5	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
33	2q92333.d	P6-C4	FA95742-6	537_ID.m	Sample		op91428,S2Q1293,125,,,1.0,1,water	✓
34	2q92334.d	P1-A7	ecc1287-20	537_ID.m	QC	100/500	op91255,S2Q1293,250,,,1.0,1,water	Pass

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35	2q92335.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1293,250,,,1.0,1,water	ND

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LCMS2-2Q ANALYSIS LOG

DATE:	06/03/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 ul
INSTRUMENT:	LCMS2-2Q

METHODS:	537MOD MS014 MS019
PROC. METH:	ID_050922_S2Q1287
CAL DATE:	05/09/22
ANALYST:	JB
RUN BATCH:	S2Q1294

ELUENT A LOT #:	216033 w/ 0.1% AA 194003
ELUENT B LOT #:	213527 w/0.1% AA 194003
IC/CC STD LOT #:	LCMS1873
ICV STD LOT #:	10947
ISTD/ID STD LOT #:	LCMS1882-C

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	2q92336.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
2	2q92337.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
3	2q92338.d	P1-B2	RT	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	Pass
4	2q92339.d	P1-A9	High Standard	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	Pass
5	2q92340.d	P1-A1	iblk	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
6	2q92341.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
7	2q92342.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
8	2q92343.d	P1-C1	FA95731-2	537_ID.m	Sample	100/500	op91428,S2Q1294,120,,,1.0,5,water	Low EIS ->REDO
9	2q92344.d	P1-C2	FA95731-4	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	✓
10	2q92345.d	P1-C3	FA95730-7	537_ID.m	Sample	100/500	op91428,S2Q1294,120,,,1.0,5,water	✓
11	2q92346.d	P1-C4	FA95742-1	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	✓
12	2q92347.d	P1-C5	op91428-MS	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	✓
13	2q92348.d	P1-C6	FA95742-2	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	✓
14	2q92349.d	P1-C7	op91428-DUP	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	✓
15	2q92350.d	P1-C8	FA95742-3	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	Low EIS tetra -> REDO
16	2q92351.d	P1-C9	FA95742-4	537_ID.m	Sample	100/500	op91428,S2Q1294,125,,,1.0,5,water	Low EIS tetra -> REDO
17	2q92352.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
18	2q92353.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
19	2q92354.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
20	2q92355.d	P1-D1	op91429-BS	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	Pass
21	2q92356.d	P1-D2	op91429-MB	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	ND
22	2q92357.d	P1-D3	FA95746-1	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
23	2q92358.d	P1-D4	FA95746-2	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
24	2q92359.d	P1-D5	FA95746-3	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
25	2q92360.d	P1-D6	FA95746-4	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
26	2q92361.d	P1-D7	FA95746-5	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
27	2q92362.d	P1-D8	FA95746-6	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
28	2q92363.d	P1-D9	FA95746-7	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
29	2q92364.d	P1-E1	FA95746-8	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
30	2q92365.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
31	2q92366.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
32	2q92367.d	P1-E2	FA95746-9	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
33	2q92368.d	P1-E3	FA95746-10	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓
34	2q92369.d	P1-E4	FA95746-11	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	✓

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SGS ORLANDO LCMS2-2Q ANALYSIS LOG

35	2q92370.d	P1-E5	FA95746-12	537_ID.m	Sample		op91429,S2Q1294,125,,,1.0,1,water	RR 5x tetra low
36	2q92371.d	P1-E6	FA95746-13	537_ID.m	Sample		op91429,S2Q1294,110,,,1.0,1,water	✓
37	2q92372.d	P1-E7	FA95746-14	537_ID.m	Sample		op91429,S2Q1294,110,,,1.0,1,water	✓
38	2q92373.d	P1-E8	FA95746-15	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
39	2q92374.d	P1-E9	op91429-MS	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
40	2q92375.d	P1-F1	op91429-MSD	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
41	2q92376.d	P1-F2	FA95746-16	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
42	2q92377.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
43	2q92378.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
44	2q92379.d	P1-F3	FA95746-17	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	RR 10x E
45	2q92380.d	P1-F4	FA95746-18	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	RR 1x c/o, 10x E
46	2q92381.d	P1-F5	FA95746-19	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
47	2q92382.d	P1-F6	FA95746-20	537_ID.m	Sample		op91429,S2Q1294,120,,,1.0,1,water	✓
48	2q92383.d	P1-F7	FA95702-9	537_ID.m	Sample		op91372,S2Q1294,280,,,1.0,1,water	✓
49	2q92384.d	P1-A7	ecc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	Pass
50	2q92385.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	ND
51	2q92386.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1294,250,,,1.0,1,water	DNR
52	2q92387.d	P2-A1	op91465-bs	537_ID.m	Sample		op91465,S2Q1294,250,,,1.0,1,water	Wrong Plate Position RR
53	2q92388.d	P2-A2	op91465-mb	537_ID.m	Sample		op91465,S2Q1294,250,,,1.0,1,water	Wrong Plate Position RR
54	2q92389.d	P2-A3	JD45252-1A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
55	2q92390.d	P2-A4	JD45252-2A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
56	2q92391.d	P2-A5	JD45252-3A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
57	2q92392.d	P2-A6	JD45252-4A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
58	2q92393.d	P2-A7	JD45252-5A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
59	2q92394.d	P2-A8	JD45252-6A	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
60	2q92395.d	P2-A9	FA95867-12	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
61	2q92396.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	DNR
62	2q92397.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	DNR
63	2q92398.d	P2-B1	FA95867-13	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
64	2q92399.d	P2-B2	op91465-ms	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
65	2q92400.d	P2-B3	FA95867-14	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
66	2q92401.d	P2-B4	FA95867-15	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
67	2q92402.d	P2-B5	FA95867-16	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
68	2q92403.d	P2-B6	op91465-dup	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
69	2q92404.d	P2-B7	FA95867-17	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
70	2q92405.d	P2-B8	FA95867-18	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
71	2q92406.d	P2-B9	FA95867-19	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
72	2q92407.d	P2-C1	FA95867-20	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
73	2q92408.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	DNR
74	2q92409.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	DNR
75	2q92410.d	P2-C2	FA95867-21	537_ID.m	Sample		op91465,S2Q1294,265,,,1.0,1,water	Wrong Plate Position RR
76	2q92411.d	P2-C3	FA95867-22	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR

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SGS ORLANDO LCMS2-2Q ANALYSIS LOG

77	2q92412.d	P2-C4	FA95867-23	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
78	2q92413.d	P2-C5	FA95867-24	537_ID.m	Sample		op91465,S2Q1294,270,,,1.0,1,water	Wrong Plate Position RR
79	2q92414.d	P2-C6	DA45478-1	537_ID.m	Sample		op91465,S2Q1294,280,,,1.0,1,water	Wrong Plate Position RR
80	2q92415.d	P1-A7	ecc1287-20	537_ID.m	QC	100/500	op91255,S2Q1294,250,,,1.0,1,water	DNR
81	2q92416.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1294,250,,,1.0,1,water	DNR

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LCMS2-2Q ANALYSIS LOG

DATE:	06/07/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 ul
INSTRUMENT:	LCMS2-2Q

METHODS:	537MOD MS014 MS019
PROC. METH:	ID_050922_S2Q1287
CAL DATE:	05/09/22
ANALYST:	JB NG
RUN BATCH:	S2Q1298

ELUENT A LOT #:	216033 w/ 0.1% AA 194003
ELUENT B LOT #:	213527 w/0.1% AA 194003
IC/CC STD LOT #:	LCMS1873
ICV STD LOT #:	10947
ISTD/ID STD LOT #:	LCMS1882-C

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
102	2q92673.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
103	2q92674.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
104	2q92675.d	P1-B2	RT	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	✓
105	2q92676.d	P1-A9	High Standard	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	✓
106	2q92677.d	P1-A1	iblk	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
107	2q92678.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
108	2q92679.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
109	2q92680.d	P1-C1	FA95898-3	537_ID.m	Sample	100/500	op91486,S2Q1298,270,,,1.0,5,water	✓
110	2q92681.d	P1-C2	FA95898-4	537_ID.m	Sample	100/500	op91486,S2Q1298,270,,,1.0,5,water	✓
111	2q92682.d	P1-C3	FA95898-5	537_ID.m	Sample	100/500	op91486,S2Q1298,250,,,1.0,5,water	redo
112	2q92683.d	P1-C4	FA95898-6	537_ID.m	Sample	100/500	op91486,S2Q1298,270,,,1.0,5,water	✓
113	2q92684.d	P1-C5	FA95898-8	537_ID.m	Sample	100/500	op91486,S2Q1298,240,,,1.0,5,water	redo
114	2q92685.d	P1-C6	FA95898-11	537_ID.m	Sample	100/500	op91486,S2Q1298,250,,,1.0,5,water	✓
115	2q92686.d	P1-C7	FA95898-12	537_ID.m	Sample	100/500	op91486,S2Q1298,250,,,1.0,5,water	✓
116	2q92687.d	P1-C8	FA95898-16	537_ID.m	Sample	100/500	op91486,S2Q1298,250,,,1.0,5,water	✓
117	2q92688.d	P1-C9	FA95898-19	537_ID.m	Sample	100/500	op91486,S2Q1298,250,,,1.0,5,water	redo
118	2q92689.d	P1-D1	FA95898-20	537_ID.m	Sample	100/500	op91486,S2Q1298,270,,,1.0,5,water	redo
119	2q92690.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
120	2q92691.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
121	2q92692.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
122	2q92693.d	P1-D2	op91495-bs	537_ID.m	Sample		op91495,S2Q1298,2.00,,,1.0,1,soil	BS PASS
123	2q92694.d	P1-D3	op91495-mb	537_ID.m	Sample		op91495,S2Q1298,2.00,,,1.0,1,soil	ND
124	2q92695.d	P1-D4	fa95920-8	537_ID.m	Sample		op91495,S2Q1298,1.98,,,1.0,1,soil	✓
125	2q92696.d	P1-D5	fa95920-9	537_ID.m	Sample		op91495,S2Q1298,2.04,,,1.0,1,soil	✓
126	2q92697.d	P1-D6	fa95920-10	537_ID.m	Sample		op91495,S2Q1298,2.06,,,1.0,1,soil	✓
127	2q92698.d	P1-D7	fa95920-11	537_ID.m	Sample		op91495,S2Q1298,2.00,,,1.0,1,soil	✓
128	2q92699.d	P1-D8	fa95920-12	537_ID.m	Sample		op91495,S2Q1298,1.99,,,1.0,1,soil	✓
129	2q92700.d	P1-D9	fa95941-11	537_ID.m	Sample		op91495,S2Q1298,2.10,,,1.0,1,soil	rr 10x
130	2q92701.d	P1-E1	fa95941-12	537_ID.m	Sample		op91495,S2Q1298,2.05,,,1.0,1,soil	rr 1x c/o, 20x
131	2q92702.d	P1-E2	fa95941-13	537_ID.m	Sample		op91495,S2Q1298,1.98,,,1.0,1,soil	rr 1x c/o
132	2q92703.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
133	2q92704.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
134	2q92705.d	P1-E3	fa95941-14	537_ID.m	Sample		op91495,S2Q1298,2.00,,,1.0,1,soil	rr 10x
135	2q92706.d	P1-E4	fa95941-15	537_ID.m	Sample		op91495,S2Q1298,2.04,,,1.0,1,soil	rr 10x

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SGS ORLANDO LCMS2-2Q ANALYSIS LOG

136	2q92707.d	P1-E5	fa95941-16	537_ID.m	Sample		op91495,S2Q1298,2.01,,,1.0,1,soil	rr 1x c/o
137	2q92708.d	P1-E6	op91495-ms	537_ID.m	Sample		op91495,S2Q1298,2.04,,,1.0,1,soil	✓
138	2q92709.d	P1-E7	op91495-msd	537_ID.m	Sample		op91495,S2Q1298,2.00,,,1.0,1,soil	✓
139	2q92710.d	P1-E8	fa95941-17	537_ID.m	Sample		op91495,S2Q1298,1.99,,,1.0,1,soil	rr 5x
140	2q92711.d	P1-E9	fa95941-18	537_ID.m	Sample		op91495,S2Q1298,2.06,,,1.0,1,soil	rr 2x
141	2q92712.d	P1-F1	fa95941-19	537_ID.m	Sample		op91495,S2Q1298,2.03,,,1.0,1,soil	rr 10x
142	2q92713.d	P1-F2	fa95941-20	537_ID.m	Sample		op91495,S2Q1298,1.98,,,1.0,1,soil	rr 10x
143	2q92714.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
144	2q92715.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
145	2q92716.d	P1-F3	fa96054-15	537_ID.m	Sample		op91495,S2Q1298,2.02,,,1.0,1,soil	✓
146	2q92717.d	P1-F4	fa96054-16	537_ID.m	Sample		op91495,S2Q1298,2.01,,,1.0,1,soil	✓
147	2q92718.d	P1-F5	fa96054-17	537_ID.m	Sample		op91495,S2Q1298,2.04,,,1.0,1,soil	✓
148	2q92719.d	P1-F6	fa96054-18	537_ID.m	Sample		op91495,S2Q1298,1.99,,,1.0,1,soil	rr 5x
149	2q92720.d	P1-A7	cc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
150	2q92721.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND
151	2q92722.d	P1-A3	cc1287-1.0LL	537_ID.m	QC	5/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
152	2q92723.d	P1-F7	op91510-bs	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	BS PASS
153	2q92724.d	P1-F8	op91510-mb	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	ND
154	2q92725.d	P1-F9	fa95742-3	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
155	2q92726.d	P2-A1	fa95742-4	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
156	2q92727.d	P2-A2	fa95746-12	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
157	2q92728.d	P2-A3	fa95833-8	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
158	2q92729.d	P2-A4	fa95856-15	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
159	2q92730.d	P2-A5	fa95856-16	537_ID.m	Sample		op91510,S2Q1298,125,,,1.0,1,water	✓
160	2q92731.d	P1-A7	ecc1287-20	537_ID.m	QC	100/500	op91255,S2Q1298,250,,,1.0,1,water	PASS
161	2q92732.d	P1-A1	ccb	537_ID.m	Sample		op91255,S2Q1298,250,,,1.0,1,water	ND

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 05/31/22 09:00 Started {mm/dd/yy 24:00}

Date/Time: 6/2/22 10:15 Finished {mm/dd/yy 24:00}

Batch#: OP91428 Ext. By: GH Conc. By: JM Vialed By:

Prep Method: 3535A or 537 or (537MOD) (circle)

Analytical Method: LCS37(QSM)

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Manifold ID	Comments
OP 91428 MB	/	125	7	N/A	20		1.0ml	E	
OP 91428 BS	/	125	↓	↓	↓	50	↓	↓	
FA95730-1	1	125	↓	↓	↓	↓	↓	↓	
2	1	120	↓	↓	↓	↓	↓	↓	
3	1	125	↓	↓	↓	↓	↓	↓	
4	2	125	↓	↓	↓	↓	↓	↓	
5	1	120	↓	↓	↓	↓	↓	↓	
6	1	125	↓	↓	↓	↓	↓	↓	
7	1	120	↓	↓	↓	↓	↓	↓	
FA95731-2	1	120	↓	↓	↓	↓	↓	E	
3	1	125	↓	↓	↓	↓	↓	F	
4	1	125	↓	↓	↓	↓	↓	↓	
5	1	125	↓	↓	↓	↓	↓	↓	
6	1	125	7	N/A	↓	↓	↓	↓	
FA95742-1	1	125	8	6					
2	1	125	↓	↓					Cartridge clog
3	1	125	↓	↓					
4	1	125	8	6					
5	1	125	7	N/A				↓	
6	1	125	7	N/A	20		↓	F	
FA95742-1 MS	2	125	8	6	20	50	1.0ml	E	
MSD									
FA95742-2DUP	2	125	8	6	20		1.0ml	E	Cartridge clog

Comments:

Surr.1 ID: LCMS18854 Conc: 1.0 PPM Exp. Date: 11/18/22 Inj. By: GH Ver. By: BO

Spk.1 ID: LCMS1884 Conc: 400 PPB Exp. Date: 11/17/22 Inj. By: GH Ver. By: BO

Spk.2 ID: Conc: Exp. Date: Inj. By: Ver. By:

Spk.3 ID: Conc: Exp. Date: Inj. By: Ver. By:

TurboVap Temp (Therm ID): XCelvap-1

Observed Temp °C: 55 Corr. Temp °C:

N-Evap Temp (Therm ID):

Observed Temp °C: Corr. Temp °C:

Methanol Lot # 218157

Acetonitrile Lot #

Water Lot# OP90903

Solvent#

SPE Lot # 6059867-02

Syringe filter Lot #

Pre-filter Lot#

Carbon Lot# 153731

pH Paper # 226621

Reagent # 216954 (1:1) NH4OH

Reagent # 204513 MeOH

Other PE17

Relinquished By: Date: 6/2/22

Accepted By: Date: 6/2/22

ORLD-EXT-0001-3-08-FORM-extwater_spe.xls 032718

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 06/06/22 09:00 Started {mm/dd/yy 24:00}

Date/Time: 6/7/22 11:10 Finished {mm/dd/yy 24:00}

Batch#: OP91511 Ext. By: GH

Prep Method: 3535A or 537 or 537MOD (circle)

Analytical Method: LCS537(QSM)

Conc. By: JM Vialed By:

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Manifold ID	Comments
OP 91511 MB	/	125	7	N/A	20		1.0ml	A4	
OP 91511 BS	/	125				50			
FA95921-1	1	125							cartridge clog
2	1	125							↓
3	1	125							cartridge clog
4	1	120							
5	1	125							cartridge clog
6	1	125							
7	1	125						↓	
8	1	125						A4	
9	1	125						A6	
10	1	125							
11	1	125							
12	1	125							1891 F
13	1	125							cartridg clog
14	1	125							
15	1	125							
16	1	125							
17	1	125							
18	1	125							
19	1	125						↓	↓
20	1	125	↓	↓	↓			A6	1891 F
FA95921-4 MS	2	125	7	N/A	20	50	1	A4	
MSD									
FA95921-8 DUP	2	125	7	N/A	20		1.0ml	A4	

Comments:

Surr.1 ID: LCMS1891F Conc: 1.0 PPM Exp. Date: 12/01/22 Inj. By: GH Ver. By BO

Spk.1 ID: LCMS1889 Conc: 400 PPB Exp. Date: 12/01/22 Inj. By: GH Ver. By BO

Surr. Spk.2 ID: LCMS1891A Conc: 1.0 PPM Exp. Date: 12/01/22 Inj. By: GH Ver. By BO

Spk.3 ID: Conc: Exp. Date: Inj. By: Ver. By

TurboVap Temp (Therm ID): Vcelvap-1 Observed Temp °C: 55 Corr. Temp °C:

N-Evap Temp (Therm ID): Observed Temp °C: Corr. Temp °C:

Methanol Lot # 218262 SPE Lot # 0659867-02 pH Paper # 226621

Acetonitrile Lot # Syringe filter Lot # Reagent # 216954 (1:1) NH4OH

Water Lot# OP90963 Pre-filter Lot# Reagent # 204513 MeOH

Solvent# Carbon Lot# 153731 Other PF23

Relinquished By: JM Date: 6/7/22

Accepted By: MW Date: 6/7/22

ORLD-EXT-0001-3-08-FORM-extwater_spe.xls 032718

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA96225

Sampling Date: 06/05/22



Report to:

HGL, Inc
2405 N Courtenay Pkwy Suite 203
Merritt Island, FL 32953
drivers@hgl.com

ATTN: Denise Rivers

Total number of pages in report: 35

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Ariel Hartney 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA96225

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96225-1	06/05/22	07:53	BH	06/06/22	AQ	Surface Water	S118-SW0005-000.0-20220605
FA96225-2	06/05/22	08:03	BH	06/06/22	AQ	Surface Water	S118-SW0006-000.0-20220605
FA96225-3	06/05/22	08:13	BH	06/06/22	AQ	Surface Water	S118-SW0007-000.0-20220605
FA96225-4	06/05/22	08:35	BH	06/06/22	AQ	Field Blank Water	S118-FB-20220605-01
FA96225-5	06/05/22	08:30	BH	06/06/22	AQ	Equipment Blank	S118-EB-20220605-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96225

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 6/17/2022 5:04:23 PM

On 06/06/2022, 4 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s)were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96225 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91608

Sample(s) FA96019-1MS, FA96019-1MSD were used as the QC samples indicated.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96225
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/05/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96225-1	**S118-SW0005-000.0-20220605**					
Perfluorobutanoic acid		0.0130 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0064 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0151	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0056 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0073 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0663	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.143	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96225-2	**S118-SW0006-000.0-20220605**					
Perfluorobutanoic acid		0.0118 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0096	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0208	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0052 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0056 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0077 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0094	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.105	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0054 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.237	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96225-3	**S118-SW0007-000.0-20220605**					
Perfluorobutanoic acid		0.0200	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0165	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0442	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0081	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0121	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0165	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0215	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.204	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0110	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.451	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96225-4	**S118-FB-20220605-01**					

No hits reported in this sample.

Summary of Hits

Job Number: FA96225
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/05/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96225-5	**S118-EB-20220605-01**					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-SW0005-000.0-20220605
Lab Sample ID: FA96225-1 **Date Sampled:** 06/05/22
Matrix: AQ - Surface Water **Date Received:** 06/06/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61439.D	1	06/16/22 04:18	MV	06/13/22 09:00	OP91608	S3Q839
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0130	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0064	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0151	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0043	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0056	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0073	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0663	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.143	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0005-000.0-20220605		
Lab Sample ID:	FA96225-1	**Date Sampled:**	06/05/22
Matrix:	AQ - Surface Water	**Date Received:**	06/06/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	95%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	86%		50-150%
	13C7-PFUnDA	96%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	97%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	76%		50-150%
	d3-MeFOSAA	125%		50-150%
	d5-EtFOSAA	116%		50-150%
	13C2-4:2FTS	84%		50-150%
	13C2-6:2FTS	106%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	72%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220605
Lab Sample ID: FA96225-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/05/22
Date Received: 06/06/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61440.D	1	06/16/22 04:37	MV	06/13/22 09:00	OP91608	S3Q839
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0118	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0096	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0208	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0056	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0077	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0094	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.105	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0054	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.237	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220605
Lab Sample ID: FA96225-2 **Date Sampled:** 06/05/22
Matrix: AQ - Surface Water **Date Received:** 06/06/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%		50-150%
	13C5-PFPeA	87%		50-150%
	13C5-PFHxA	85%		50-150%
	13C4-PFHpA	99%		50-150%
	13C8-PFOA	109%		50-150%
	13C9-PFNA	105%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	105%		50-150%
	13C2-PFDoDA	98%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	90%		50-150%
	13C3-PFHxS	105%		50-150%
	13C8-PFOS	101%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSAA	137%		50-150%
	d5-EtFOSAA	129%		50-150%
	13C2-4:2FTS	94%		50-150%
	13C2-6:2FTS	117%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	84%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0007-000.0-20220605
Lab Sample ID: FA96225-3
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/05/22
Date Received: 06/06/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61441.D	1	06/16/22 04:56	MV	06/13/22 09:00	OP91608	S3Q839
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0200	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0165	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0442	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0081	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0121	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0165	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0215	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.204	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0110	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.451	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0007-000.0-20220605		
Lab Sample ID:	FA96225-3	**Date Sampled:**	06/05/22
Matrix:	AQ - Surface Water	**Date Received:**	06/06/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	95%		50-150%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	80%		50-150%
	13C4-PFHpA	95%		50-150%
	13C8-PFOA	109%		50-150%
	13C9-PFNA	104%		50-150%
	13C6-PFDA	103%		50-150%
	13C7-PFUnDA	107%		50-150%
	13C2-PFDoDA	95%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	105%		50-150%
	13C8-PFOS	101%		50-150%
	13C8-FOSA	57%		50-150%
	d3-MeFOSAA	135%		50-150%
	d5-EtFOSAA	123%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	118%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220605-01
Lab Sample ID: FA96225-4
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/05/22
Date Received: 06/06/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61442.D	1	06/16/22 05:14	MV	06/13/22 09:00	OP91608	S3Q839
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FB-20220605-01		
Lab Sample ID:	FA96225-4	**Date Sampled:**	06/05/22
Matrix:	AQ - Field Blank Water	**Date Received:**	06/06/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	111%		50-150%
	13C5-PFPeA	108%		50-150%
	13C5-PFHxA	108%		50-150%
	13C4-PFHpA	112%		50-150%
	13C8-PFOA	112%		50-150%
	13C9-PFNA	109%		50-150%
	13C6-PFDA	96%		50-150%
	13C7-PFUnDA	106%		50-150%
	13C2-PFDoDA	105%		50-150%
	13C2-PFTeDA	101%		50-150%
	13C3-PFBS	110%		50-150%
	13C3-PFHxS	107%		50-150%
	13C8-PFOS	107%		50-150%
	13C8-FOSA	110%		50-150%
	d3-MeFOSAA	125%		50-150%
	d5-EtFOSAA	126%		50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	111%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	112%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220605-01
Lab Sample ID: FA96225-5
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/05/22
Date Received: 06/06/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61492.D	1	06/16/22 21:28	MV	06/13/22 09:00	OP91608	S3Q840
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-EB-20220605-01		
Lab Sample ID:	FA96225-5	**Date Sampled:**	06/05/22
Matrix:	AQ - Equipment Blank	**Date Received:**	06/06/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	119%		50-150%
	13C5-PFPeA	120%		50-150%
	13C5-PFHxA	120%		50-150%
	13C4-PFHpA	118%		50-150%
	13C8-PFOA	119%		50-150%
	13C9-PFNA	119%		50-150%
	13C6-PFDA	107%		50-150%
	13C7-PFUnDA	113%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	113%		50-150%
	13C3-PFBS	120%		50-150%
	13C3-PFHxS	114%		50-150%
	13C8-PFOS	117%		50-150%
	13C8-FOSA	115%		50-150%
	d3-MeFOSAA	116%		50-150%
	d5-EtFOSAA	115%		50-150%
	13C2-4:2FTS	112%		50-150%
	13C2-6:2FTS	116%		50-150%
	13C2-8:2FTS	109%		50-150%
	13C3-HFPO-DA	118%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS North America Inc - Orlando
Chain of Custody

FA96225

SGS - ORLANDO JOB # : PAGE 1 OF 1

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information

Company Name: AGL INC.
Address: 2405 N COURTENAY PKWY SUITE 203
City: MERRIT IS. State: FL Zip: 32937
Project Contact: DENISE RIVERS Email: drivers@hgl.com
Phone #: 910 233 8460
Sampler(s) Name(s) (Printed)
Sampler 1: B HUSTON Sampler 2:

Project Information

Project Name: 5118 PFAS SW SAMPLING
Street KENNEDY SPACE CENTER
City MERRIT IS. State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNA	DI WATER	MEOH	Analytical Information: 537 MOD 24 HR PFAS
1	5118-SW0003	5-16-22	7:53	BH	GW	2		X								X
2	5118-SW0006	5-16-22	8:03	BH	GW	2		X								X
3	5118-SW0007	5-16-22	08:13	BH	GW	2		X								X
4	5118 ~~SW~~ FB-20220605-01	5-16-22	0835	BH	WW	2		X								X
5	5118 - EB-20220605-01	5-16-22	0830	BH	WW	2		X								X

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

LAB USE ONLY

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		6-16-22 11:30	2	3	6/16/22 14:00	4 6/16/22 1400
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 4.8 IR

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA96225: Chain of Custody
Page 1 of 3

SGS Sample Receipt Summary

Job Number: FA96225 **Client:** HGL INC **Project:** 5118 PFAS SW SAMPLING

Date / Time Received: 6/6/2022 2:00:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (5.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 6/6/2022 2:00:00 PM Reviewer: _____ Date: _____

Job Change Order: FA96225

Requested Date:	6/13/2022	**Received Date:**	6/6/2022
Account Name:	Hydrogeologic, Inc.	**Due Date:**	6/20/2022
Project Description:	NASA TQN 21- SLF PFAS Assessment	**Deliverable:**	FULT1
CSR:	AH	**TAT (Days):**	7

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Sample #: FA96225-1 **Change:**

Dept: ID: S118-SW0005-000.0-20220605; collection date 06/05/22

TAT: 7

S118-SW0005-000.0-20220605

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Sample #: FA96225-2 **Change:**

Dept: ID: S118-SW0006-000.0-20220605; collection date 06/05/22

TAT: 7

S118-SW0006-000.0-20220605

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Sample #: FA96225-3 **Change:**

Dept: ID: S118-SW0007-000.0-20220605; collection date 06/05/22

TAT: 7

S118-SW0007-000.0-20220605

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FA96225: Chain of Custody
Page 3 of 3

Above Changes Per: Client **Date/Time:** 6/13/2022 2:18:16 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96225
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/05/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91608	EPA 537M QSM5.3 B-15						
OP91608-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP91608-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	81	%	72-129
OP91608-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	82	%	72-129
OP91608-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	81	%	72-130
OP91608-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	80	%	71-133
OP91608-BS	375-95-1	Perfluorononanoic acid	BSP	REC	83	%	69-130
OP91608-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	80	%	71-129
OP91608-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	82	%	69-133
OP91608-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	81	%	72-134
OP91608-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	80	%	65-144
OP91608-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	82	%	71-132
OP91608-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	83	%	72-130
OP91608-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	83	%	71-127
OP91608-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	81	%	68-131
OP91608-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	86	%	69-134
OP91608-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	76	%	65-140
OP91608-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	81	%	69-127
OP91608-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	87	%	53-142
OP91608-BS	754-91-6	PFOSA	BSP	REC	86	%	67-137
OP91608-BS	2355-31-9	MeFOSAA	BSP	REC	83	%	65-136
OP91608-BS	2991-50-6	EtFOSAA	BSP	REC	82	%	61-135
OP91608-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	82	%	63-143
OP91608-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	87	%	64-140
OP91608-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	86	%	67-138
OP91608-MS1*	375-22-4	Perfluorobutanoic acid	MS	REC	89	%	73-129
OP91608-MS1*	2706-90-3	Perfluoropentanoic acid	MS	REC	87	%	72-129
OP91608-MS1*	307-24-4	Perfluorohexanoic acid	MS	REC	84	%	72-129
OP91608-MS1*	375-85-9	Perfluoroheptanoic acid	MS	REC	85	%	72-130
OP91608-MS1*	335-67-1	Perfluorooctanoic acid	MS	REC	85	%	71-133
OP91608-MS1*	375-95-1	Perfluorononanoic acid	MS	REC	87	%	69-130
OP91608-MS1*	335-76-2	Perfluorodecanoic acid	MS	REC	82	%	71-129
OP91608-MS1*	2058-94-8	Perfluoroundecanoic acid	MS	REC	86	%	69-133
OP91608-MS1*	307-55-1	Perfluorododecanoic acid	MS	REC	85	%	72-134
OP91608-MS1*	72629-94-8	Perfluorotridecanoic acid	MS	REC	86	%	65-144
OP91608-MS1*	376-06-7	Perfluorotetradecanoic acid	MS	REC	85	%	71-132
OP91608-MS1*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	100	%	72-130
OP91608-MS1*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	89	%	71-127
OP91608-MS1*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	85	%	68-131
OP91608-MS1*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	93	%	69-134
OP91608-MS1*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	79	%	65-140
OP91608-MS1*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	90	%	69-127
OP91608-MS1*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	89	%	53-142

* Sample used for QC is not from job FA96225

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96225
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/05/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91608-MS1*	754-91-6	PFOSA	MS	REC	90	%	67-137
OP91608-MS1*	2355-31-9	MeFOSAA	MS	REC	88	%	65-136
OP91608-MS1*	2991-50-6	EtFOSAA	MS	REC	88	%	61-135
OP91608-MS1*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	85	%	63-143
OP91608-MS1*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	93	%	64-140
OP91608-MS1*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	89	%	67-138
OP91608-MSD1*	375-22-4	Perfluorobutanoic acid	MSD	REC	89	%	73-129
OP91608-MSD1*	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	2706-90-3	Perfluoropentanoic acid	MSD	REC	88	%	72-129
OP91608-MSD1*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	307-24-4	Perfluorohexanoic acid	MSD	REC	84	%	72-129
OP91608-MSD1*	307-24-4	Perfluorohexanoic acid	MSD	RPD	0	%	30
OP91608-MSD1*	375-85-9	Perfluoroheptanoic acid	MSD	REC	85	%	72-130
OP91608-MSD1*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	335-67-1	Perfluorooctanoic acid	MSD	REC	85	%	71-133
OP91608-MSD1*	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	375-95-1	Perfluorononanoic acid	MSD	REC	88	%	69-130
OP91608-MSD1*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	335-76-2	Perfluorodecanoic acid	MSD	REC	82	%	71-129
OP91608-MSD1*	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	85	%	69-133
OP91608-MSD1*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	1	%	30
OP91608-MSD1*	307-55-1	Perfluorododecanoic acid	MSD	REC	85	%	72-134
OP91608-MSD1*	307-55-1	Perfluorododecanoic acid	MSD	RPD	0	%	30
OP91608-MSD1*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	88	%	65-144
OP91608-MSD1*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP91608-MSD1*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	85	%	71-132
OP91608-MSD1*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	0	%	30
OP91608-MSD1*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	101	%	72-130
OP91608-MSD1*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP91608-MSD1*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	89	%	71-127
OP91608-MSD1*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	0	%	30
OP91608-MSD1*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	87	%	68-131
OP91608-MSD1*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP91608-MSD1*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	93	%	69-134
OP91608-MSD1*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	0	%	30
OP91608-MSD1*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	79	%	65-140
OP91608-MSD1*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP91608-MSD1*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	85	%	69-127
OP91608-MSD1*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	5	%	30
OP91608-MSD1*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	85	%	53-142
OP91608-MSD1*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	4	%	30
OP91608-MSD1*	754-91-6	PFOSA	MSD	REC	90	%	67-137
OP91608-MSD1*	754-91-6	PFOSA	MSD	RPD	0	%	30
OP91608-MSD1*	2355-31-9	MeFOSAA	MSD	REC	89	%	65-136

* Sample used for QC is not from job FA96225

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96225
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/05/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91608-MSD1*	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP91608-MSD1*	2991-50-6	EtFOSAA	MSD	REC	87	%	61-135
OP91608-MSD1*	2991-50-6	EtFOSAA	MSD	RPD	1	%	30
OP91608-MSD1*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	86	%	63-143
OP91608-MSD1*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91608-MSD1*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	92	%	64-140
OP91608-MSD1*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91608-MSD1*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	90	%	67-138
OP91608-MSD1*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30

* Sample used for QC is not from job FA96225

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q839-IBLK	3Q61411.D	1	06/15/22	MV	n/a	n/a	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	91%	50-150%

Instrument Blank

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q839-IBLK	3Q61411.D	1	06/15/22	MV	n/a	n/a	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	90%	50-150%

Instrument Blank

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q840-IBLK	3Q61481.D	1	06/16/22	MV	n/a	n/a	S3Q840

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	95%	50-150%

Instrument Blank

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q840-IBLK	3Q61481.D	1	06/16/22	MV	n/a	n/a	S3Q840

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	95%	50-150%

Method Blank Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-MB	3Q61416.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	111%	50-150%
	13C5-PFPeA	112%	50-150%
	13C5-PFHxA	112%	50-150%
	13C4-PFHpA	114%	50-150%
	13C8-PFOA	116%	50-150%
	13C9-PFNA	114%	50-150%
	13C6-PFDA	99%	50-150%

Method Blank Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-MB	3Q61416.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	83%	50-150%
	d3-MeFOSAA	123%	50-150%
	d5-EtFOSAA	124%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	109%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	107%	50-150%

Blank Spike Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-BS	3Q61415.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.137	86	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.129	81	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.131	82	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.129	81	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.128	80	71-133
375-95-1	Perfluorononanoic acid	0.16	0.132	83	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.128	80	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.131	82	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.129	81	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.128	80	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.131	82	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.132	83	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.132	83	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.130	81	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.137	86	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.122	76	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.130	81	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.139	87	53-142
754-91-6	PFOSA	0.16	0.137	86	67-137
2355-31-9	MeFOSAA	0.16	0.132	83	65-136
2991-50-6	EtFOSAA	0.16	0.131	82	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.131	82	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.139	87	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.137	86	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.130	81	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	120%	50-150%
	13C5-PFPeA	120%	50-150%
	13C5-PFHxA	121%	50-150%
	13C4-PFHpA	122%	50-150%
	13C8-PFOA	122%	50-150%
	13C9-PFNA	121%	50-150%
	13C6-PFDA	105%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-BS	3Q61415.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	113%	50-150%
	13C2-PFDoDA	115%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	120%	50-150%
	13C3-PFHxS	115%	50-150%
	13C8-PFOS	120%	50-150%
	13C8-FOSA	114%	50-150%
	d3-MeFOSA	88%	50-150%
	d3-MeFOSAA	134%	50-150%
	d5-EtFOSAA	133%	50-150%
	13C2-4:2FTS	119%	50-150%
	13C2-6:2FTS	119%	50-150%
	13C2-8:2FTS	114%	50-150%
	13C3-HFPO-DA	113%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-MS1	3Q61420.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839
OP91608-MSD1	3Q61421.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839
FA96019-1	3Q61419.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	Compound	FA96019-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.017	U	0.167	0.149	89	0.167	0.148	89	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0083	U	0.167	0.145	87	0.167	0.146	88	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0083	U	0.167	0.140	84	0.167	0.140	84	0	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0083	U	0.167	0.142	85	0.167	0.141	85	1	72-130/30
335-67-1	Perfluorooctanoic acid	0.0040	J	0.167	0.146	85	0.167	0.145	85	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.145	87	0.167	0.146	88	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.137	82	0.167	0.136	82	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.143	86	0.167	0.142	85	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.141	85	0.167	0.141	85	0	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.144	86	0.167	0.147	88	2	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.142	85	0.167	0.142	85	0	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.167	0.167	100	0.167	0.168	101	1	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.167	0.149	89	0.167	0.149	89	0	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0046	J	0.167	0.146	85	0.167	0.149	87	2	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.167	0.155	93	0.167	0.155	93	0	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0221		0.167	0.153	79	0.167	0.154	79	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.150	90	0.167	0.142	85	5	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.148	89	0.167	0.142	85	4	53-142/30
754-91-6	PFOSA	0.0083	U	0.167	0.150	90	0.167	0.150	90	0	67-137/30
2355-31-9	MeFOSAA	0.017	U	0.167	0.147	88	0.167	0.149	89	1	65-136/30
2991-50-6	EtFOSAA	0.017	U	0.167	0.146	88	0.167	0.145	87	1	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.141	85	0.167	0.143	86	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.155	93	0.167	0.154	92	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.149	89	0.167	0.150	90	1	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.146	88	0.167	0.142	85	3	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96019-1	Limits
	13C4-PFBA	112%	103%		50-150%
	13C5-PFPeA	106%	98%		50-150%
	13C5-PFHxA	103%	95%	89%	50-150%
	13C4-PFHpA	110%	103%	97%	50-150%
	13C8-PFOA	114%	105%	101%	50-150%
	13C9-PFNA	110%	99%	96%	50-150%
	13C6-PFDA	102%	92%	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96225
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91608-MS1	3Q61420.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839
OP91608-MSD1	3Q61421.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839
FA96019-1	3Q61419.D	1	06/15/22	MV	06/13/22	OP91608	S3Q839

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96225-1, FA96225-2, FA96225-3, FA96225-4, FA96225-5

CAS No.	ID Standard Recoveries	MS	MSD	FA96019-1	Limits
	13C7-PFUnDA	108%	93%	90%	50-150%
	13C2-PFDoDA	105%	87%	89%	50-150%
	13C2-PFTeDA	99%	78%	83%	50-150%
	13C3-PFBS	105%	97%	92%	50-150%
	13C3-PFHxS	109%	99%	94%	50-150%
	13C8-PFOS	107%	97%	91%	50-150%
	13C8-FOSA	98%	75%		50-150%
	d3-MeFOSA	41%* [a]	18%* [a]		50-150%
	d3-MeFOSAA	131%	112%	114%	50-150%
	d5-EtFOSAA	128%	108%	111%	50-150%
	13C2-4:2FTS	113%	104%		50-150%
	13C2-6:2FTS	117%	108%		50-150%
	13C2-8:2FTS	109%	94%		50-150%
	13C3-HFPO-DA	95%	90%	81%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.13

SGS Job Number: FA96628

Sampling Date: 06/16/22



Report to:

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Total number of pages in report: 39

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Sample Summary

Hydrogeologic, Inc.

Job No: FA96628

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.13

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96628-1	06/16/22	08:50	WD	06/17/22	AQ	Surface Water	S118-SW0008-000.0-20220616
FA96628-2	06/16/22	08:50	WD	06/17/22	AQ	Surface Water	S118-FD-20220616-01
FA96628-3	06/16/22	08:55	WD	06/17/22	AQ	Field Blank Water	S118-FB-20220616-01
FA96628-4	06/16/22	09:00	WD	06/17/22	AQ	Equipment Blank	S118-EB-20220616-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96628

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 7/20/2022 2:34:42 PM

On 06/17/2022, 3 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96628 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91859

Sample(s) FA96611-2MS, FA96611-3DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluorobutanesulfonic acid, Perfluoropentanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FA96628-2 have surrogates outside control limits.

FA96628-2: Confirmation run.

Matrix: AQ **Batch ID:** OP92012

Sample(s) FA96628-2 have surrogates outside control limits.

FA96628-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FA96628-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA96628-2 for 13C2-PFTeDA: Outside control limits.

FA96628-2 for 13C3-HFPO-DA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96628
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96628-1	**S118-SW0008-000.0-20220616**					
Perfluorobutanoic acid		0.0118 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0125	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0172	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0068 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0073 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.100	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0079 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.633	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96628-2	**S118-FD-20220616-01**					
Perfluorobutanoic acid		0.0112 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0079 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0152	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0065 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0091	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0895	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0070 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.613	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96628-3	**S118-FB-20220616-01**					
No hits reported in this sample.						
FA96628-4	**S118-EB-20220616-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-SW0008-000.0-20220616
Lab Sample ID: FA96628-1 **Date Sampled:** 06/16/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94696.D	1	07/07/22 18:29	JB	06/28/22 10:00	OP91859	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0118	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0125	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0172	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0068	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0073	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.100	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0079	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.633	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0008-000.0-20220616
Lab Sample ID: FA96628-1 **Date Sampled:** 06/16/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	71%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	79%		50-150%
	13C7-PFUnDA	77%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	75%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	63%		50-150%
	d3-MeFOSAA	83%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	79%		50-150%
	13C2-8:2FTS	78%		50-150%
	13C3-HFPO-DA	54%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220616-01
Lab Sample ID: FA96628-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/16/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95189.D	1	07/18/22 04:09	JB	07/11/22 09:20	OP92012	S2Q1329
Run #2 [a]	2Q94698.D	1	07/07/22 19:02	JB	06/28/22 10:00	OP91859	S2Q1322

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0112	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0079	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0152	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0065	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0091	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0895	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0070	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.613	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220616-01
Lab Sample ID: FA96628-2 **Date Sampled:** 06/16/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	58%	50-150%
	13C5-PFPeA	57%	59%	50-150%
	13C5-PFHxA	62%	63%	50-150%
	13C4-PFHpA	69%	68%	50-150%
	13C8-PFOA	80%	75%	50-150%
	13C9-PFNA	78%	76%	50-150%
	13C6-PFDA	77%	76%	50-150%
	13C7-PFUnDA	77%	68%	50-150%
	13C2-PFDoDA	69%	62%	50-150%
	13C2-PFTeDA	40% [c]	44% [c]	50-150%
	13C3-PFBS	59%	65%	50-150%
	13C3-PFHxS	76%	72%	50-150%
	13C8-PFOS	73%	79%	50-150%
	13C8-FOSA	67%	67%	50-150%
	d3-MeFOSAA	86%	80%	50-150%
	d5-EtFOSAA	79%	85%	50-150%
	13C2-4:2FTS	60%	64%	50-150%
	13C2-6:2FTS	83%	79%	50-150%
	13C2-8:2FTS	81%	73%	50-150%
	13C3-HFPO-DA	49% [c]	47% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FB-20220616-01		
Lab Sample ID:	FA96628-3	**Date Sampled:**	06/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94700.D	1	07/07/22 19:35	JB	06/28/22 10:00	OP91859	S2Q1322
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220616-01
Lab Sample ID: FA96628-3 **Date Sampled:** 06/16/22
Matrix: AQ - Field Blank Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	106%		50-150%
	13C5-PFPeA	107%		50-150%
	13C5-PFHxA	110%		50-150%
	13C4-PFHpA	107%		50-150%
	13C8-PFOA	112%		50-150%
	13C9-PFNA	111%		50-150%
	13C6-PFDA	113%		50-150%
	13C7-PFUnDA	109%		50-150%
	13C2-PFDoDA	109%		50-150%
	13C2-PFTeDA	111%		50-150%
	13C3-PFBS	114%		50-150%
	13C3-PFHxS	111%		50-150%
	13C8-PFOS	114%		50-150%
	13C8-FOSA	113%		50-150%
	d3-MeFOSAA	113%		50-150%
	d5-EtFOSAA	117%		50-150%
	13C2-4:2FTS	109%		50-150%
	13C2-6:2FTS	104%		50-150%
	13C2-8:2FTS	107%		50-150%
	13C3-HFPO-DA	91%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220616-01
Lab Sample ID: FA96628-4
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/16/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94535.D	1	07/03/22 21:36	JB	06/28/22 10:00	OP91859	S2Q1321
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220616-01
Lab Sample ID: FA96628-4 **Date Sampled:** 06/16/22
Matrix: AQ - Equipment Blank **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	66%		50-150%
	13C9-PFNA	67%		50-150%
	13C6-PFDA	66%		50-150%
	13C7-PFUnDA	67%		50-150%
	13C2-PFDoDA	67%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	69%		50-150%
	13C3-PFHxS	68%		50-150%
	13C8-PFOS	67%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSAA	68%		50-150%
	d5-EtFOSAA	69%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	62%		50-150%
	13C2-8:2FTS	63%		50-150%
	13C3-HFPO-DA	58%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96628

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS _ ORLANDO JOB #: PAGE 1 OF 1

SGS - ORLANDO Quote: SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway STE. 203
City: Merritt Island State: FL Zip: 32953
Project Contact: Denise Rivers Email: drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: William Duttenhaver Sampler 2: Dustin Lupis

Project Information

Project Name : SWMU S118
Street: Kennedy Pkwy.
City: Kennedy Space Center State: FL
Project #: NS1010.01.13
Fax #:
Client Purchase Order #:

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL - 24 Analytes + GEN X	LAB USE ONLY
1	S118 - SW0008 - 000.0 - 20220616	6/16/22	8:50	WD	SW	2	X								X	
2	S118 - FD - 20220616 - ~~02~~ DL -01	6/16/22	8:50	WD	SW	2	X								X	
3	S118 - FB - 20220616 - ~~02~~ DL -01	6/16/22	8:55	WD	WW	2	X								X	
4	S118 - EB - 20220616 - ~~02~~ DL -01	6/16/22	9:00	WD	WW	2	X								X	

Turnaround Time (Business days)

Std. 10 Business Days — Approved By: / Date/Rush Code:
7 Day *RUSH*
5 Day *RUSH*
3 Day *EMERGENCY*
2 Day *EMERGENCY*
1 Day *EMERGENCY*
Other
Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT NG
LABEL VERIFICATION TW

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		6-17-22 1535	2 6/17/22 1535	3 6/17/2022 16:40		4 6/17/22 1640
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved Where Applicable: Y N Total # of Coolers: ____ Cooler Temperature (s) Celsius: 3.2C 1.8C 4.6C DKL

FA96628: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96628 **Client:** HGL INC. **Project:** SWMU S118

Date / Time Received: 6/17/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8); Cooler 3: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (5.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/17/2022 4:40:00 PM Reviewer: _____ Date: _____

FA96628: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96628
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91859	EPA 537M QSM5.3 B-15						
OP91859-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	119	%	73-129
OP91859-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	118	%	72-129
OP91859-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	118	%	72-129
OP91859-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	115	%	72-130
OP91859-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	118	%	71-133
OP91859-BS	375-95-1	Perfluorononanoic acid	BSP	REC	120	%	69-130
OP91859-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	119	%	71-129
OP91859-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	113	%	69-133
OP91859-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	113	%	72-134
OP91859-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	107	%	65-144
OP91859-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	119	%	71-132
OP91859-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	116	%	72-130
OP91859-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	116	%	71-127
OP91859-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	114	%	68-131
OP91859-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	122	%	69-134
OP91859-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	109	%	65-140
OP91859-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	114	%	69-127
OP91859-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	109	%	53-142
OP91859-BS	754-91-6	PFOSA	BSP	REC	121	%	67-137
OP91859-BS	2355-31-9	MeFOSAA	BSP	REC	114	%	65-136
OP91859-BS	2991-50-6	EtFOSAA	BSP	REC	118	%	61-135
OP91859-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	116	%	63-143
OP91859-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	115	%	64-140
OP91859-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	119	%	67-138
OP91859-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	125	%	73-129
OP91859-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	125	%	72-129
OP91859-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	124	%	72-129
OP91859-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	127	%	72-130
OP91859-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	125	%	71-133
OP91859-MS*	375-95-1	Perfluorononanoic acid	MS	REC	124	%	69-130
OP91859-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	125	%	71-129
OP91859-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	120	%	69-133
OP91859-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	120	%	72-134
OP91859-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	115	%	65-144
OP91859-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	124	%	71-132
OP91859-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	140	%	72-130
OP91859-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	129	%	71-127
OP91859-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	123	%	68-131
OP91859-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	125	%	69-134
OP91859-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	115	%	65-140
OP91859-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	122	%	69-127
OP91859-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	125	%	53-142

* Sample used for QC is not from job FA96628

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96628
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91859-MS*	754-91-6	PFOSA	MS	REC	125	%	67-137
OP91859-MS*	2355-31-9	MeFOSAA	MS	REC	126	%	65-136
OP91859-MS*	2991-50-6	EtFOSAA	MS	REC	124	%	61-135
OP91859-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	124	%	63-143
OP91859-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	122	%	64-140
OP91859-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	126	%	67-138
OP91859-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	3	%	30
OP91859-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	1	%	30
OP91859-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	3	%	30
OP91859-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	2	%	30
OP91859-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91859-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	25	%	30
OP91859-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	9	%	30
OP91859-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	2	%	30
OP91859-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91859-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	4	%	30
OP91859-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91859-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91859-DUP*	754-91-6	PFOSA	DUP	RPD	5	%	30
OP91859-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91859-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91859-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91859-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91859-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP92012	EPA 537M QSM5.3 B-15						
OP92012-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	73-129
OP92012-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	112	%	72-129
OP92012-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	111	%	72-129
OP92012-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	110	%	72-130
OP92012-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	110	%	71-133
OP92012-BS	375-95-1	Perfluorononanoic acid	BSP	REC	105	%	69-130
OP92012-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	111	%	71-129
OP92012-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	104	%	69-133
OP92012-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP92012-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	95	%	65-144
OP92012-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	117	%	71-132
OP92012-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	107	%	72-130

* Sample used for QC is not from job FA96628

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96628
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92012-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	104	%	71-127
OP92012-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP92012-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	105	%	69-134
OP92012-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	111	%	65-140
OP92012-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	109	%	69-127
OP92012-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	94	%	53-142
OP92012-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP92012-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP92012-BS	2991-50-6	EtFOSAA	BSP	REC	119	%	61-135
OP92012-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	112	%	63-143
OP92012-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	107	%	64-140
OP92012-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	107	%	67-138

* Sample used for QC is not from job FA96628

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1321-IBLK	2Q94506.D	1	07/03/22	JB	n/a	n/a	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	97%	50-150%

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1321-IBLK	2Q94506.D	1	07/03/22	JB	n/a	n/a	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSA	102%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	79%	50-150%

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	92%	50-150%

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	94%	50-150%

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1329-IBLK	2Q95147.D	1	07/17/22	JB	n/a	n/a	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1329-IBLK	2Q95147.D	1	07/17/22	JB	n/a	n/a	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	94%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	75%	50-150%

Method Blank Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-MB	2Q94512.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	67%	50-150%
	13C5-PFPeA	66%	50-150%
	13C5-PFHxA	67%	50-150%
	13C4-PFHpA	68%	50-150%
	13C8-PFOA	66%	50-150%
	13C9-PFNA	67%	50-150%
	13C6-PFDA	65%	50-150%

Method Blank Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-MB	2Q94512.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	63%	50-150%
	13C2-PFDoDA	60%	50-150%
	13C2-PFTeDA	51%	50-150%
	13C3-PFBS	67%	50-150%
	13C3-PFHxS	65%	50-150%
	13C8-PFOS	63%	50-150%
	13C8-FOSA	63%	50-150%
	d3-MeFOSAA	66%	50-150%
	d5-EtFOSAA	65%	50-150%
	13C2-4:2FTS	65%	50-150%
	13C2-6:2FTS	65%	50-150%
	13C2-8:2FTS	63%	50-150%
	13C3-HFPO-DA	59%	50-150%

Method Blank Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-MB	2Q95172.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-MB	2Q95172.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	48%* [a]	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	88%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	75%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-BS	2Q94511.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.190	119	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.188	118	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.188	118	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.184	115	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.188	118	71-133
375-95-1	Perfluorononanoic acid	0.16	0.192	120	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.190	119	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.181	113	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.181	113	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.171	107	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.191	119	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.185	116	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.185	116	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.183	114	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.195	122	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.174	109	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.182	114	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.174	109	53-142
754-91-6	PFOSA	0.16	0.193	121	67-137
2355-31-9	MeFOSAA	0.16	0.183	114	65-136
2991-50-6	EtFOSAA	0.16	0.188	118	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.186	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.184	115	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.190	119	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.184	115	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	71%	50-150%
	13C5-PFPeA	72%	50-150%
	13C5-PFHxA	73%	50-150%
	13C4-PFHpA	73%	50-150%
	13C8-PFOA	72%	50-150%
	13C9-PFNA	71%	50-150%
	13C6-PFDA	71%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-BS	2Q94511.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	71%	50-150%
	13C2-PFDoDA	69%	50-150%
	13C2-PFTeDA	62%	50-150%
	13C3-PFBS	73%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	72%	50-150%
	13C8-FOSA	67%	50-150%
	d3-MeFOSAA	77%	50-150%
	d5-EtFOSAA	73%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	75%	50-150%
	13C3-HFPO-DA	65%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-BS	2Q95171.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0798	100	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0896	112	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0889	111	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0882	110	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0876	110	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0843	105	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0885	111	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0835	104	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0836	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0763	95	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0936	117	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0853	107	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0831	104	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0828	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0838	105	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0889	111	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0868	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0752	94	53-142
754-91-6	PFOSA	0.08	0.0873	109	67-137
2355-31-9	MeFOSAA	0.08	0.0872	109	65-136
2991-50-6	EtFOSAA	0.08	0.0953	119	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0897	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0853	107	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0855	107	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0880	110	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92012-BS	2Q95171.D	1	07/17/22	JB	07/11/22	OP92012	S2Q1329

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSA	30%* [a]	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	82%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-MS	2Q94515.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321
FA96611-2	2Q94514.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	Compound	FA96611-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.020 U		0.182	0.227	125	73-129
2706-90-3	Perfluoropentanoic acid	0.0036	J	0.182	0.230	125	72-129
307-24-4	Perfluorohexanoic acid	0.0028	J	0.182	0.229	124	72-129
375-85-9	Perfluoroheptanoic acid	0.010 U		0.182	0.231	127	72-130
335-67-1	Perfluorooctanoic acid	0.0064	J	0.182	0.233	125	71-133
375-95-1	Perfluorononanoic acid	0.010 U		0.182	0.225	124	69-130
335-76-2	Perfluorodecanoic acid	0.010 U		0.182	0.227	125	71-129
2058-94-8	Perfluoroundecanoic acid	0.010 U		0.182	0.218	120	69-133
307-55-1	Perfluorododecanoic acid	0.010 U		0.182	0.219	120	72-134
72629-94-8	Perfluorotridecanoic acid	0.010 U		0.182	0.210	115	65-144
376-06-7	Perfluorotetradecanoic acid	0.010 U		0.182	0.226	124	71-132
375-73-5	Perfluorobutanesulfonic acid	0.010 U		0.182	0.254	140*	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.010 U		0.182	0.234	129*	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0135		0.182	0.237	123	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.010 U		0.182	0.228	125	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.010 U		0.182	0.210	115	65-140
68259-12-1	Perfluorononanesulfonic acid	0.010 U		0.182	0.222	122	69-127
335-77-3	Perfluorodecanesulfonic acid	0.010 U		0.182	0.227	125	53-142
754-91-6	PFOSA	0.010 U		0.182	0.228	125	67-137
2355-31-9	MeFOSAA	0.020 U		0.182	0.230	126	65-136
2991-50-6	EtFOSAA	0.020 U		0.182	0.226	124	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U		0.182	0.225	124	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.020 U		0.182	0.222	122	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.020 U		0.182	0.230	126	67-138
13252-13-6	HFPO-DA (GenX)	0.020 U		0.182	0.234	129	60-140

CAS No.	ID Standard Recoveries	MS	FA96611-2	Limits
	13C4-PFBA	53%	56%	50-150%
	13C5-PFPeA	54%	58%	50-150%
	13C5-PFHxA	55%	59%	50-150%
	13C4-PFHpA	55%	61%	50-150%
	13C8-PFOA	55%	61%	50-150%
	13C9-PFNA	56%	61%	50-150%
	13C6-PFDA	55%	61%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-MS	2Q94515.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321
FA96611-2	2Q94514.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	ID Standard Recoveries	MS	FA96611-2	Limits
	13C7-PFUnDA	55%	60%	50-150%
	13C2-PFDoDA	55%	60%	50-150%
	13C2-PFTeDA	53%	59%	50-150%
	13C3-PFBS	55%	60%	50-150%
	13C3-PFHxS	57%	62%	50-150%
	13C8-PFOS	59%	62%	50-150%
	13C8-FOSA	55%	63%	50-150%
	d3-MeFOSAA	59%	68%	50-150%
	d5-EtFOSAA	60%	69%	50-150%
	13C2-4:2FTS	58%	60%	50-150%
	13C2-6:2FTS	55%	61%	50-150%
	13C2-8:2FTS	59%	61%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-DUP	2Q94517.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321
FA96611-3	2Q94516.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	Compound	FA96611-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016	U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0094		0.0097		3	30
307-24-4	Perfluorohexanoic acid	0.0135		0.0137		1	30
375-85-9	Perfluoroheptanoic acid	0.0095		0.0092		3	30
335-67-1	Perfluorooctanoic acid	0.0170		0.0174		2	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0070	J	0.0090		25	30
2706-91-4	Perfluoropentanesulfonic acid	0.0076	J	0.0083		9	30
355-46-4	Perfluorohexanesulfonic acid	0.0904		0.0924		2	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0549		0.0569		4	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0087		0.0083		5	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96611-3	Limits
	13C4-PFBA	56%	54%	50-150%
	13C5-PFPeA	56%	53%	50-150%
	13C5-PFHxA	58%	55%	50-150%
	13C4-PFHpA	59%	56%	50-150%
	13C8-PFOA	58%	56%	50-150%
	13C9-PFNA	59%	57%	50-150%
	13C6-PFDA	57%	54%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96628
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91859-DUP	2Q94517.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321
FA96611-3	2Q94516.D	1	07/03/22	JB	06/28/22	OP91859	S2Q1321

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96628-1, FA96628-3, FA96628-4

CAS No.	ID Standard Recoveries	DUP	FA96611-3	Limits
	13C7-PFUnDA	58%	54%	50-150%
	13C2-PFDoDA	58%	54%	50-150%
	13C2-PFTeDA	52%	51%	50-150%
	13C3-PFBS	59%	56%	50-150%
	13C3-PFHxS	60%	56%	50-150%
	13C8-PFOS	60%	56%	50-150%
	13C8-FOSA	59%	58%	50-150%
	d3-MeFOSAA	59%	57%	50-150%
	d5-EtFOSAA	61%	58%	50-150%
	13C2-4:2FTS	55%	53%	50-150%
	13C2-6:2FTS	55%	54%	50-150%
	13C2-8:2FTS	57%	54%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.13

SGS Job Number: FA96629

Sampling Date: 06/17/22



Report to:

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Total number of pages in report: 44

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA96629

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.13

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96629-1	06/17/22	11:10	WD	06/17/22	AQ	Surface Water	S118-SW0005-000.0-20220617
FA96629-2	06/17/22	11:10	WD	06/17/22	AQ	Surface Water	S118-FD-20220617-01
FA96629-3	06/17/22	11:20	WD	06/17/22	AQ	Surface Water	S118-SW0006-000.0-20220617
FA96629-4	06/17/22	11:25	WD	06/17/22	AQ	Surface Water	S118-SW0007-000.0-20220617
FA96629-5	06/17/22	11:30	WD	06/17/22	AQ	Field Blank Water	S118-FB-20220617-01
FA96629-6	06/17/22	11:35	WD	06/17/22	AQ	Equipment Blank	S118-EB-20220617-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96629

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 7/20/2022 2:35:28 PM

On 06/17/2022, 5 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96629 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91875

Sample(s) FA96602-1MS, FA96602-1MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for Perfluoroheptanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FA96629-1, FA96629-2, FA96629-3, FA96629-4 have surrogates outside control limits.

FA96629-1: Confirmation run.

FA96629-2: Confirmation run.

FA96629-3: Confirmation run.

FA96629-4: Confirmation run.

Matrix: AQ **Batch ID:** OP91991

Sample(s) FA96629-1, FA96629-2, FA96629-3, FA96629-4 have surrogates outside control limits.

FA96629-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96629-1 for 13C2-PFTeDA: Outside control limits.

FA96629-2 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96629-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96629-2 for 13C2-PFTeDA: Outside control limits.

FA96629-2 for 13C8-FOSA: Outside control limits.

FA96629-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96629-3 for 13C2-PFTeDA: Outside control limits.

FA96629-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA96629-4 for 13C2-PFTeDA: Outside control limits.

FA96629-4 for 13C4-PFBA: Outside control limits.

FA96629-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96629
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96629-1	**S118-SW0005-000.0-20220617**					
Perfluorobutanoic acid		0.0152 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0064 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0163	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0037 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0055 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0076 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0717	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.162	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96629-2	**S118-FD-20220617-01**					
Perfluorobutanoic acid		0.0171	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0064 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0167	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0075 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0760	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.172	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96629-3	**S118-SW0006-000.0-20220617**					
Perfluorobutanoic acid		0.0214	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0151	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0393	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0068 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0104	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0165	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.176	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0103	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.442	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96629-4	**S118-SW0007-000.0-20220617**					
Perfluorobutanoic acid [a]		0.0211	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0082	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0250	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96629
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanoic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0092	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0117	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.141	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0128	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.542	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

FA96629-5 S118-FB-20220617-01

No hits reported in this sample.

FA96629-6 S118-EB-20220617-01

No hits reported in this sample.

(a) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-SW0005-000.0-20220617
Lab Sample ID: FA96629-1 **Date Sampled:** 06/17/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62976.D	1	07/18/22 22:58	MV	07/08/22 09:55	OP91991	S3Q859
Run #2 [a]	3Q62428.D	1	07/07/22 08:21	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0152	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0064	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0163	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0037	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0055	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0076	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0717	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.162	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0005-000.0-20220617		
Lab Sample ID:	FA96629-1	**Date Sampled:**	06/17/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%	34% [c]	50-150%
	13C5-PFPeA	66%	43% [c]	50-150%
	13C5-PFHxA	66%	42% [c]	50-150%
	13C4-PFHpA	75%	48% [c]	50-150%
	13C8-PFOA	88%	55%	50-150%
	13C9-PFNA	82%	49% [c]	50-150%
	13C6-PFDA	88%	48% [c]	50-150%
	13C7-PFUnDA	82%	49% [c]	50-150%
	13C2-PFDoDA	74%	41% [c]	50-150%
	13C2-PFTeDA	47% [c]	28% [c]	50-150%
	13C3-PFBS	68%	45% [c]	50-150%
	13C3-PFHxS	85%	56%	50-150%
	13C8-PFOS	76%	47% [c]	50-150%
	13C8-FOSA	58%	32% [c]	50-150%
	d3-MeFOSAA	102%	59%	50-150%
	d5-EtFOSAA	84%	49% [c]	50-150%
	13C2-4:2FTS	71%	46% [c]	50-150%
	13C2-6:2FTS	100%	62%	50-150%
	13C2-8:2FTS	86%	53%	50-150%
	13C3-HFPO-DA	57%	34% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220617-01
Lab Sample ID: FA96629-2
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62806.D	1	07/16/22 01:20	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62429.D	1	07/07/22 08:40	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0171	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0064	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0167	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0075	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0760	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.172	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220617-01
Lab Sample ID: FA96629-2 **Date Sampled:** 06/17/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	35% [c]	50-150%
	13C5-PFPeA	61%	41% [c]	50-150%
	13C5-PFHxA	59%	40% [c]	50-150%
	13C4-PFHpA	68%	46% [c]	50-150%
	13C8-PFOA	78%	52%	50-150%
	13C9-PFNA	67%	46% [c]	50-150%
	13C6-PFDA	71%	47% [c]	50-150%
	13C7-PFUnDA	77%	49% [c]	50-150%
	13C2-PFDoDA	71%	40% [c]	50-150%
	13C2-PFTeDA	49% [c]	26% [c]	50-150%
	13C3-PFBS	61%	42% [c]	50-150%
	13C3-PFHxS	75%	52%	50-150%
	13C8-PFOS	66%	44% [c]	50-150%
	13C8-FOSA	48% [c]	43% [c]	50-150%
	d3-MeFOSAA	84%	58%	50-150%
	d5-EtFOSAA	68%	49% [c]	50-150%
	13C2-4:2FTS	64%	42% [c]	50-150%
	13C2-6:2FTS	88%	57%	50-150%
	13C2-8:2FTS	83%	51%	50-150%
	13C3-HFPO-DA	54%	33% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220617
Lab Sample ID: FA96629-3
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62807.D	1	07/16/22 01:38	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62430.D	1	07/07/22 08:58	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0214	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0151	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0393	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0068	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0104	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0127	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0165	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.176	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0103	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.442	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220617
Lab Sample ID: FA96629-3 **Date Sampled:** 06/17/22
Matrix: AQ - Surface Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	57%	36% [c]	50-150%
	13C5-PFPeA	60%	40% [c]	50-150%
	13C5-PFHxA	59%	39% [c]	50-150%
	13C4-PFHpA	69%	46% [c]	50-150%
	13C8-PFOA	82%	54%	50-150%
	13C9-PFNA	70%	48% [c]	50-150%
	13C6-PFDA	68%	51%	50-150%
	13C7-PFUnDA	72%	55%	50-150%
	13C2-PFDoDA	62%	47% [c]	50-150%
	13C2-PFTeDA	37% [c]	33% [c]	50-150%
	13C3-PFBS	61%	40% [c]	50-150%
	13C3-PFHxS	78%	52%	50-150%
	13C8-PFOS	63%	47% [c]	50-150%
	13C8-FOSA	53%	41% [c]	50-150%
	d3-MeFOSAA	78%	63%	50-150%
	d5-EtFOSAA	66%	56%	50-150%
	13C2-4:2FTS	64%	42% [c]	50-150%
	13C2-6:2FTS	92%	61%	50-150%
	13C2-8:2FTS	79%	53%	50-150%
	13C3-HFPO-DA	54%	32% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0007-000.0-20220617
Lab Sample ID: FA96629-4
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62808.D	1	07/16/22 01:57	MV	07/08/22 09:55	OP91991	S3Q857
Run #2 [a]	3Q62431.D	1	07/07/22 09:17	NG	06/29/22 10:05	OP91875	S3Q851

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0211	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0082	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0250	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0092	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0117	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.141	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0128	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.542	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0007-000.0-20220617		
Lab Sample ID:	FA96629-4	**Date Sampled:**	06/17/22
Matrix:	AQ - Surface Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	31% [c]	29% [c]	50-150%
	13C5-PFPeA	68%	53%	50-150%
	13C5-PFHxA	65%	50%	50-150%
	13C4-PFHpA	74%	59%	50-150%
	13C8-PFOA	86%	68%	50-150%
	13C9-PFNA	70%	60%	50-150%
	13C6-PFDA	65%	63%	50-150%
	13C7-PFUnDA	67%	67%	50-150%
	13C2-PFDoDA	53%	59%	50-150%
	13C2-PFTeDA	22% [c]	42% [c]	50-150%
	13C3-PFBS	67%	53%	50-150%
	13C3-PFHxS	79%	66%	50-150%
	13C8-PFOS	62%	58%	50-150%
	13C8-FOSA	58%	55%	50-150%
	d3-MeFOSAA	75%	77%	50-150%
	d5-EtFOSAA	61%	69%	50-150%
	13C2-4:2FTS	70%	55%	50-150%
	13C2-6:2FTS	95%	75%	50-150%
	13C2-8:2FTS	76%	66%	50-150%
	13C3-HFPO-DA	59%	42% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220617-01
Lab Sample ID: FA96629-5
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62432.D	1	07/07/22 09:36	NG	06/29/22 10:05	OP91875	S3Q851
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FB-20220617-01		
Lab Sample ID:	FA96629-5	**Date Sampled:**	06/17/22
Matrix:	AQ - Field Blank Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	57%		50-150%
	13C7-PFUnDA	58%		50-150%
	13C2-PFDoDA	53%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	66%		50-150%
	13C8-PFOS	57%		50-150%
	13C8-FOSA	59%		50-150%
	d3-MeFOSAA	60%		50-150%
	d5-EtFOSAA	56%		50-150%
	13C2-4:2FTS	68%		50-150%
	13C2-6:2FTS	72%		50-150%
	13C2-8:2FTS	57%		50-150%
	13C3-HFPO-DA	64%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220617-01
Lab Sample ID: FA96629-6
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/17/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q62811.D	1	07/16/22 02:52	MV	07/08/22 09:55	OP91991	S3Q857
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220617-01
Lab Sample ID: FA96629-6 **Date Sampled:** 06/17/22
Matrix: AQ - Equipment Blank **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		50-150%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	78%		50-150%
	13C9-PFNA	67%		50-150%
	13C6-PFDA	59%		50-150%
	13C7-PFUnDA	70%		50-150%
	13C2-PFDoDA	64%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	68%		50-150%
	13C8-FOSA	72%		50-150%
	d3-MeFOSAA	67%		50-150%
	d5-EtFOSAA	65%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	76%		50-150%
	13C2-8:2FTS	69%		50-150%
	13C3-HFPO-DA	81%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96629

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL inc
Address: 2405 N. Courtney Pkwy STE. 203
City: Merritt Island State: FL Zip: 32953
Project Contact: Denise Rivers Email: drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: W. Dattenhaver Sampler 2: D. Lyons

Project Information

Project Name: SWMU 5118
Street: Kennedy Pkwy
City: Kennedy Space Center State: FL
Project #: NS1010.01.13
Fax #:
Client Purchase Order #:

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	Analytical: 537 Dioxin - LCMS+GFNX	LAB USE ONLY
1	5118-SW00005-000.0-20220617	6/17/22	1110	WD	SW	2		X								X	
2	5118-FD-20220617-01	6/17/22	1110	WD	SW	2		X								X	
3	5118-SW00006-000.0-20220617	6/17/22	1120	WD	SW	2		X								X	
4	5118-SW00007-000.0-20220617	6/17/22	1125	WD	SW	2		X								X	
5	5118-FB-20220617-01	6/17/22	1130	WD	WW	2		X								X	
6	5118-EB-20220617-01	6/17/22	1135	WD	WW	2		X								X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

INITIAL ASSESSMENT NS
LABEL VERIFICATION TM

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		6-17-22 1535	2	3		4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.2C, 1.8C, 4.6C CTR

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

SGS Sample Receipt Summary

Job Number: FA96629 **Client:** HGL INC. **Project:** SWMV S118

Date / Time Received: 6/17/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8); Cooler 3: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (4.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/17/2022 4:40:00 PM Reviewer: _____ Date: _____

FA96629: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96629
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875	EPA 537M QSM5.3 B-15						
OP91875-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	108	%	73-129
OP91875-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	114	%	72-129
OP91875-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	112	%	72-129
OP91875-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	110	%	72-130
OP91875-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	112	%	71-133
OP91875-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP91875-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	110	%	71-129
OP91875-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	106	%	69-133
OP91875-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	110	%	72-134
OP91875-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	114	%	65-144
OP91875-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	113	%	71-132
OP91875-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	112	%	72-130
OP91875-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	110	%	71-127
OP91875-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	112	%	68-131
OP91875-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	123	%	69-134
OP91875-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	113	%	65-140
OP91875-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	108	%	69-127
OP91875-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	106	%	53-142
OP91875-BS	754-91-6	PFOSA	BSP	REC	112	%	67-137
OP91875-BS	2355-31-9	MeFOSAA	BSP	REC	115	%	65-136
OP91875-BS	2991-50-6	EtFOSAA	BSP	REC	110	%	61-135
OP91875-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	112	%	63-143
OP91875-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP91875-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	110	%	67-138
OP91875-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	98	%	73-129
OP91875-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	72-129
OP91875-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	99	%	72-129
OP91875-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	102	%	72-130
OP91875-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	109	%	71-133
OP91875-MS*	375-95-1	Perfluorononanoic acid	MS	REC	110	%	69-130
OP91875-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	108	%	71-129
OP91875-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	101	%	69-133
OP91875-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	101	%	72-134
OP91875-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	92	%	65-144
OP91875-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	99	%	71-132
OP91875-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	102	%	72-130
OP91875-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	95	%	71-127
OP91875-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	107	%	68-131
OP91875-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	128	%	69-134
OP91875-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	108	%	65-140
OP91875-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	103	%	69-127
OP91875-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	111	%	53-142

* Sample used for QC is not from job FA96629

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96629
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875-MS*	754-91-6	PFOSA	MS	REC	106	%	67-137
OP91875-MS*	2355-31-9	MeFOSAA	MS	REC	109	%	65-136
OP91875-MS*	2991-50-6	EtFOSAA	MS	REC	109	%	61-135
OP91875-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	106	%	63-143
OP91875-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	84	%	64-140
OP91875-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	109	%	67-138
OP91875-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP91875-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	105	%	72-129
OP91875-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	103	%	72-129
OP91875-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	3	%	30
OP91875-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	108	%	72-130
OP91875-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	5	%	30
OP91875-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	120	%	71-133
OP91875-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	8	%	30
OP91875-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	126	%	69-130
OP91875-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	13	%	30
OP91875-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	119	%	71-129
OP91875-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	10	%	30
OP91875-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	113	%	69-133
OP91875-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	11	%	30
OP91875-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	109	%	72-134
OP91875-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	8	%	30
OP91875-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	94	%	65-144
OP91875-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP91875-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	103	%	71-132
OP91875-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	4	%	30
OP91875-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	105	%	72-130
OP91875-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP91875-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	97	%	71-127
OP91875-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP91875-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	122	%	68-131
OP91875-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP91875-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	142	%	69-134
OP91875-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	10	%	30
OP91875-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	130	%	65-140
OP91875-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	11	%	30
OP91875-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	115	%	69-127
OP91875-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	11	%	30
OP91875-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	132	%	53-142
OP91875-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	17	%	30
OP91875-MSD*	754-91-6	PFOSA	MSD	REC	116	%	67-137
OP91875-MSD*	754-91-6	PFOSA	MSD	RPD	10	%	30
OP91875-MSD*	2355-31-9	MeFOSAA	MSD	REC	121	%	65-136

* Sample used for QC is not from job FA96629

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96629
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/17/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91875-MSD*	2355-31-9	MeFOSAA	MSD	RPD	10	%	30
OP91875-MSD*	2991-50-6	EtFOSAA	MSD	REC	107	%	61-135
OP91875-MSD*	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP91875-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	107	%	63-143
OP91875-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91875-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	107	%	64-140
OP91875-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	9	%	30
OP91875-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	123	%	67-138
OP91875-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	12	%	30
OP91991	EPA 537M QSM5.3 B-15						
OP91991-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	109	%	73-129
OP91991-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	115	%	72-129
OP91991-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	111	%	72-129
OP91991-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	112	%	72-130
OP91991-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	113	%	71-133
OP91991-BS	375-95-1	Perfluorononanoic acid	BSP	REC	112	%	69-130
OP91991-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	113	%	71-129
OP91991-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	109	%	69-133
OP91991-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	111	%	72-134
OP91991-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	111	%	65-144
OP91991-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	116	%	71-132
OP91991-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	113	%	72-130
OP91991-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP91991-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	115	%	68-131
OP91991-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	116	%	69-134
OP91991-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	114	%	65-140
OP91991-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	115	%	69-127
OP91991-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	99	%	53-142
OP91991-BS	754-91-6	PFOSA	BSP	REC	109	%	67-137
OP91991-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP91991-BS	2991-50-6	EtFOSAA	BSP	REC	114	%	61-135
OP91991-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	116	%	63-143
OP91991-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	113	%	64-140
OP91991-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	115	%	67-138

* Sample used for QC is not from job FA96629

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q851-IBLK	3Q62387.D	1	07/06/22	NG	n/a	n/a	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	88%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q851-IBLK	3Q62387.D	1	07/06/22	NG	n/a	n/a	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	98%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	81%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	92%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62768.D	1	07/15/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	100%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	93%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q857-IBLK	3Q62854.D	1	07/16/22	MV	n/a	n/a	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	101%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	85%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q859-IBLK	3Q63017.D	1	07/19/22	MV	n/a	n/a	S3Q859

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	89%	50-150%

Instrument Blank

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q859-IBLK	3Q63017.D	1	07/19/22	MV	n/a	n/a	S3Q859

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSA	94%	50-150%
	d3-MeFOSAA	96%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	89%	50-150%

Method Blank Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MB	3Q62418.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	75%	50-150%
	13C5-PFPeA	74%	50-150%
	13C5-PFHxA	74%	50-150%
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	74%	50-150%
	13C6-PFDA	72%	50-150%

Method Blank Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MB	3Q62418.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	68%	50-150%
	13C2-PFTeDA	56%	50-150%
	13C3-PFBS	74%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	72%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSA	33%*	50-150%
	d3-MeFOSAA	83%	50-150%
	d5-EtFOSAA	77%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	72%	50-150%
	13C3-HFPO-DA	62%	50-150%

Method Blank Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1, FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	89%	50-150%

Method Blank Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-MB	3Q62802.D	1	07/16/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1, FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	84%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	91%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	96%	50-150%

Blank Spike Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-BS	3Q62417.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0860	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0915	114	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0892	112	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0879	110	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0894	112	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0901	113	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0878	110	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0847	106	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0876	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0908	114	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0902	113	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0892	112	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0876	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0895	112	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0980	123	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0900	113	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0865	108	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0850	106	53-142
754-91-6	PFOSA	0.08	0.0893	112	67-137
2355-31-9	MeFOSAA	0.08	0.0922	115	65-136
2991-50-6	EtFOSAA	0.08	0.0883	110	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0893	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0870	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0878	110	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0985	123	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	84%	50-150%
	13C5-PFPeA	83%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-BS	3Q62417.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	79%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSA	22%*	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	70%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1, FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.174	109	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.184	115	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.178	111	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.179	112	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.179	112	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.180	113	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.174	109	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.177	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.178	111	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.186	116	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.181	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.178	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.184	115	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.186	116	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.183	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.184	115	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.159	99	53-142
754-91-6	PFOSA	0.16	0.174	109	67-137
2355-31-9	MeFOSAA	0.16	0.175	109	65-136
2991-50-6	EtFOSAA	0.16	0.182	114	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.185	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.181	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.184	115	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.167	104	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	50-150%
	13C5-PFPeA	119%	50-150%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	119%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	106%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91991-BS	3Q62801.D	1	07/15/22	MV	07/08/22	OP91991	S3Q857

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-1, FA96629-2, FA96629-3, FA96629-4, FA96629-6

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	119%	50-150%
	13C3-PFHxS	119%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	120%	50-150%
	13C2-6:2FTS	121%	50-150%
	13C2-8:2FTS	133%	50-150%
	13C3-HFPO-DA	116%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MS	3Q62420.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
OP91875-MSD	3Q62421.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
FA96602-1	3Q62419.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	Compound	FA96602-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0260		0.167	0.189	98	0.167	0.194	101	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0960		0.167	0.263	100	0.167	0.271	105	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0719		0.167	0.237	99	0.167	0.243	103	3	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0306		0.167	0.200	102	0.167	0.210	108	5	72-130/30
335-67-1	Perfluorooctanoic acid	0.0246		0.167	0.206	109	0.167	0.224	120	8	71-133/30
375-95-1	Perfluorononanoic acid	0.0142		0.167	0.197	110	0.167	0.224	126	13	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.180	108	0.167	0.198	119	10	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.169	101	0.167	0.189	113	11	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.168	101	0.167	0.182	109	8	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.153	92	0.167	0.156	94	2	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.165	99	0.167	0.171	103	4	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0103		0.167	0.180	102	0.167	0.185	105	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0123		0.167	0.171	95	0.167	0.174	97	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0712		0.167	0.249	107	0.167	0.274	122	10	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0071	J	0.167	0.220	128	0.167	0.244	142*	10	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.125		0.167	0.305	108	0.167	0.342	130	11	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.171	103	0.167	0.191	115	11	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.185	111	0.167	0.220	132	17	53-142/30
754-91-6	PFOSA	0.0083	U	0.167	0.176	106	0.167	0.194	116	10	67-137/30
2355-31-9	MeFOSAA	0.017	U	0.167	0.182	109	0.167	0.201	121	10	65-136/30
2991-50-6	EtFOSAA	0.017	U	0.167	0.182	109	0.167	0.179	107	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.177	106	0.167	0.178	107	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.257		0.167	0.397	84	0.167	0.435	107	9	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.182	109	0.167	0.205	123	12	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.193	116	0.167	0.190	114	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96602-1	Limits
	13C4-PFBA	63%	69%	61%	50-150%
	13C5-PFPeA	63%	69%	61%	50-150%
	13C5-PFHxA	63%	69%	62%	50-150%
	13C4-PFHpA	61%	64%	63%	50-150%
	13C8-PFOA	57%	55%	64%	50-150%
	13C9-PFNA	49%* [a]	42%* [a]	57%	50-150%
	13C6-PFDA	42%* [a]	37%* [a]	51%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96629
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91875-MS	3Q62420.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
OP91875-MSD	3Q62421.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851
FA96602-1	3Q62419.D	1	07/07/22	NG	06/29/22	OP91875	S3Q851

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96629-5

CAS No.	ID Standard Recoveries	MS	MSD	FA96602-1	Limits
	13C7-PFUnDA	45%* [a]	39%* [a]	53%	50-150%
	13C2-PFDoDA	45%* [a]	40%* [a]	51%	50-150%
	13C2-PFTeDA	49%* [a]	49%* [a]	52%	50-150%
	13C3-PFBS	64%	69%	62%	50-150%
	13C3-PFHxS	55%	52%	61%	50-150%
	13C8-PFOS	45%* [a]	40%* [a]	52%	50-150%
	13C8-FOSA	49%* [a]	45%* [a]		50-150%
	d3-MeFOSAA	47%* [a]	41%* [a]	57%	50-150%
	d5-EtFOSAA	45%* [a]	39%* [a]	56%	50-150%
	13C2-4:2FTS	62%	69%	58%	50-150%
	13C2-6:2FTS	64%	63%	68%	50-150%
	13C2-8:2FTS	45%* [a]	38%* [a]	52%	50-150%
	13C3-HFPO-DA			54%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA96632

Sampling Date: 06/16/22



Report to:

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Total number of pages in report: 51

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

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Technical Director

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA96632

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96632-1	06/16/22	12:39	JB	06/17/22	AQ	Ground Water	S118-DPT1007-005.0-20220616
FA96632-2	06/16/22	12:51	JB	06/17/22	AQ	Ground Water	S118-DPT1007-015.0-20220616
FA96632-3	06/16/22	13:08	JB	06/17/22	AQ	Ground Water	S118-DPT1007-025.0-20220616
FA96632-4	06/16/22	13:23	JB	06/17/22	AQ	Ground Water	S118-DPT1007-035.0-20220616
FA96632-5	06/16/22	13:43	JB	06/17/22	AQ	Ground Water	S118-DPT1007-045.0-20220616
FA96632-6	06/16/22	14:59	JB	06/17/22	AQ	Ground Water	S118-DPT1008-005.0-20220616
FA96632-7	06/16/22	15:10	JB	06/17/22	AQ	Ground Water	S118-DPT1008-015.0-20220616
FA96632-8	06/16/22	15:29	JB	06/17/22	AQ	Ground Water	S118-DPT1008-025.0-20220616
FA96632-9	06/16/22	15:43	JB	06/17/22	AQ	Ground Water	S118-DPT1008-035.0-20220616
FA96632-10	06/16/22	16:01	JB	06/17/22	AQ	Ground Water	S118-DPT1008-045.0-20220616
FA96632-11	06/16/22	16:01	JB	06/17/22	AQ	Ground Water	S118-FD-20220616-01
FA96632-12	06/16/22	16:20	JB	06/17/22	AQ	Equipment Blank	S118-EB-20220616-01
FA96632-13	06/16/22	16:25	JB	06/17/22	AQ	Field Blank Water	S118-FB-20220616-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96632

Site: NASA TQN 21- SLF PFAS Assessment **Report Date** 7/22/2022 1:57:40 PM

On 06/17/2022, 11 Samples, 1 Equipment Blank, and 1 Field Blank were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96632 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91949

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples FA96632-1MS, FA96632-2DUP were used as the QC samples indicated.

Samples FA96632-1, FA96632-10, FA96632-11, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, and FA96632-9 have surrogates outside control limits.

FA96632-1: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-1 for PFOSA: Associated ID Standard outside control limits due to matrix interference.

FA96632-1: Insufficient sample for re-extraction.

FA96632-2: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference.

FA96632-2: Insufficient sample for re-extraction.

FA96632-3: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96632-3 for 13C2-PFTeDA: Outside control limits.

FA96632-3 for 13C4-PFBA: Outside control limits.

FA96632-3 for 13C5-PFPeA: Outside control limits.

FA96632-3 for 13C8-FOSA: Outside control limits.

FA96632-4: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96632-4 for 13C4-PFBA: Outside control limits.

FA96632-4 for 13C2-PFTeDA: Outside control limits.

FA96632-5: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-5 for 13C8-FOSA: Outside control limits.

FA96632-6: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-6 for 13C2-PFTeDA: Outside control limits.

FA96632-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96632-7: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-7 for PFOSA: Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.

FA96632-7 for 13C2-PFTeDA: Outside control limits.

FA96632-7 for 13C4-PFBA: Outside control limits.

FA96632-7 for 13C5-PFPeA: Outside control limits.

FA96632-7 for 13C8-FOSA: Outside control limits.

FA96632-8: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-8 for 13C8-FOSA: Outside control limits.

FA96632-9: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-9 for PFOSA: Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.

FA96632-9 for 13C2-PFTeDA: Outside control limits.

FA96632-9 for 13C4-PFBA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91949

FA96632-9 for 13C8-FOSA: Outside control limits.

FA96632-10: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-10 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis

FA96632-10 for 13C2-PFTeDA: Outside control limits.

FA96632-10 for 13C8-FOSA: Outside control limits.

FA96632-11: Dilution required due to matrix interference (ID recovery standard failure).

FA96632-11 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.

FA96632-11 for 13C8-FOSA: Outside control limits.

FA96632-11 for 13C2-PFTeDA: Outside control limits.

OP91949-DUP: Dilution required due to matrix interference.

OP91949-DUP for PFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP92135

The following samples were extracted outside of holding time for method EPA 537M QSM5.3 B-15: FA96632-3, FA96632-4, FA96632-6, FA96632-7, FA96632-9, FA96632-10, and FA96632-11.

FA96632-3: Confirmation run.

FA96632-4: Confirmation run.

FA96632-6: Confirmation run.

FA96632-7: Confirmation run.

FA96632-9: Confirmation run.

FA96632-10: Confirmation run, surrogates outside control limits.

FA96632-11: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Elizabeth Kent, Quality Assurance Officer *(Signature on File)*

Summary of Hits

Job Number: FA96632
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96632-1	**S118-DPT1007-005.0-20220616**					
No hits reported in this sample.						
FA96632-2	**S118-DPT1007-015.0-20220616**					
No hits reported in this sample.						
FA96632-3	**S118-DPT1007-025.0-20220616**					
No hits reported in this sample.						
FA96632-4	**S118-DPT1007-035.0-20220616**					
No hits reported in this sample.						
FA96632-5	**S118-DPT1007-045.0-20220616**					
No hits reported in this sample.						
FA96632-6	**S118-DPT1008-005.0-20220616**					
Perfluoropentanoic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96632-7	**S118-DPT1008-015.0-20220616**					
Perfluorohexanoic acid		0.0029 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0046 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96632-8	**S118-DPT1008-025.0-20220616**					
Perfluorobutanoic acid		0.0067 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0097	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0102	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0060 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0303	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0322	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96632
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96632-9	**S118-DPT1008-035.0-20220616**					
Perfluoropentanoic acid		0.0157	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0056 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0214	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0109	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96632-10	**S118-DPT1008-045.0-20220616**					
Perfluoropentanoic acid		0.0154	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0103	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96632-11	**S118-FD-20220616-01**					
Perfluoropentanoic acid		0.0158	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0069 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0042 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0096	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96632-12	**S118-EB-20220616-01**					
No hits reported in this sample.						
FA96632-13	**S118-FB-20220616-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	S118-DPT1007-005.0-20220616		
Lab Sample ID:	FA96632-1	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	6Q2035.D	1.7	07/13/22 23:30	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [b]	6Q2036.D	8.3	07/13/22 23:45	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.014 U	0.027	0.014	0.0068	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
307-24-4	Perfluorohexanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
335-67-1	Perfluorooctanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
375-95-1	Perfluorononanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
335-76-2	Perfluorodecanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
307-55-1	Perfluorododecanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0068 U	0.014	0.0068	0.0034	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.033 U [d]	0.066	0.033	0.017	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.014 U	0.027	0.014	0.0068	ug/l	
2991-50-6	EtFOSAA	0.014 U	0.027	0.014	0.0068	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.014 U	0.027	0.014	0.0068	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.014 U	0.027	0.014	0.0068	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1007-005.0-20220616
Lab Sample ID: FA96632-1 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.014 U	0.027	0.014	0.0068	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.014 U	0.027	0.014	0.0068	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	72%	50-150%
	13C5-PFPeA	66%	75%	50-150%
	13C5-PFHxA	72%	80%	50-150%
	13C4-PFHpA	77%	76%	50-150%
	13C8-PFOA	73%	77%	50-150%
	13C9-PFNA	67%	65%	50-150%
	13C6-PFDA	70%	63%	50-150%
	13C7-PFUnDA	63%	64%	50-150%
	13C2-PFDoDA	70%	71%	50-150%
	13C2-PFTeDA	62%	56%	50-150%
	13C3-PFBS	77%	84%	50-150%
	13C3-PFHxS	76%	83%	50-150%
	13C8-PFOS	64%	66%	50-150%
	13C8-FOSA	31% [e]	35%	50-150%
	d3-MeFOSAA	68%	68%	50-150%
	d5-EtFOSAA	67%	71%	50-150%
	13C2-4:2FTS	77%	77%	50-150%
	13C2-6:2FTS	81%	78%	50-150%
	13C2-8:2FTS	69%	67%	50-150%
	13C3-HFPO-DA	70%	74%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits due to matrix interference.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1007-015.0-20220616
Lab Sample ID: FA96632-2 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	6Q2038.D	1	07/14/22 00:16	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [b]	6Q2039.D	5	07/14/22 00:31	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [c]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1007-015.0-20220616
Lab Sample ID: FA96632-2 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [e]	57%	50-150%
	13C5-PFPeA	48% [e]	61%	50-150%
	13C5-PFHxA	54%	64%	50-150%
	13C4-PFHpA	58%	65%	50-150%
	13C8-PFOA	62%	68%	50-150%
	13C9-PFNA	62%	68%	50-150%
	13C6-PFDA	66%	67%	50-150%
	13C7-PFUnDA	65%	68%	50-150%
	13C2-PFDoDA	58%	60%	50-150%
	13C2-PFTeDA	45% [e]	48% [e]	50-150%
	13C3-PFBS	56%	64%	50-150%
	13C3-PFHxS	62%	69%	50-150%
	13C8-PFOS	63%	68%	50-150%
	13C8-FOSA	47% [e]	52%	50-150%
	d3-MeFOSAA	68%	69%	50-150%
	d5-EtFOSAA	64%	67%	50-150%
	13C2-4:2FTS	55%	60%	50-150%
	13C2-6:2FTS	63%	66%	50-150%
	13C2-8:2FTS	61%	65%	50-150%
	13C3-HFPO-DA	54%	66%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits due to matrix interference.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1007-025.0-20220616		
Lab Sample ID:	FA96632-3	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2044.D	1	07/14/22 01:48	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2440.D	1	07/21/22 04:13	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2045.D	5	07/14/22 02:03	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [c]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1007-025.0-20220616		
Lab Sample ID:	FA96632-3	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	43% [e]	58%	57%	50-150%
	13C5-PFPeA	47% [e]	68%	60%	50-150%
	13C5-PFHxA	54%	79%	63%	50-150%
	13C4-PFHpA	57%	85%	63%	50-150%
	13C8-PFOA	61%	94%	67%	50-150%
	13C9-PFNA	61%	90%	65%	50-150%
	13C6-PFDA	64%	87%	61%	50-150%
	13C7-PFUnDA	61%	82%	63%	50-150%
	13C2-PFDoDA	58%	79%	59%	50-150%
	13C2-PFTeDA	35% [e]	66%	42% [e]	50-150%
	13C3-PFBS	56%	80%	64%	50-150%
	13C3-PFHxS	61%	89%	66%	50-150%
	13C8-PFOS	60%	87%	63%	50-150%
	13C8-FOSA	45% [e]	68%	49% [e]	50-150%
	d3-MeFOSAA	70%	89%	66%	50-150%
	d5-EtFOSAA	61%	88%	68%	50-150%
	13C2-4:2FTS	56%	86%	59%	50-150%
	13C2-6:2FTS	66%	95%	67%	50-150%
	13C2-8:2FTS	64%	88%	63%	50-150%
	13C3-HFPO-DA	50%	77%	62%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits, Confirmed by re-analysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1007-035.0-20220616		
Lab Sample ID:	FA96632-4	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2046.D	1	07/14/22 02:18	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2441.D	1	07/21/22 04:29	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2047.D	5	07/14/22 02:34	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [c]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1007-035.0-20220616		
Lab Sample ID:	FA96632-4	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	48% [e]	72%	63%	50-150%
	13C5-PFPeA	52%	77%	66%	50-150%
	13C5-PFHxA	57%	86%	70%	50-150%
	13C4-PFHpA	59%	91%	69%	50-150%
	13C8-PFOA	62%	97%	73%	50-150%
	13C9-PFNA	62%	96%	71%	50-150%
	13C6-PFDA	61%	97%	65%	50-150%
	13C7-PFUnDA	58%	93%	66%	50-150%
	13C2-PFDoDA	57%	83%	61%	50-150%
	13C2-PFTeDA	47% [e]	72%	40% [e]	50-150%
	13C3-PFBS	58%	87%	68%	50-150%
	13C3-PFHxS	62%	93%	75%	50-150%
	13C8-PFOS	61%	96%	71%	50-150%
	13C8-FOSA	52%	67%	56%	50-150%
	d3-MeFOSAA	64%	100%	71%	50-150%
	d5-EtFOSAA	64%	92%	67%	50-150%
	13C2-4:2FTS	59%	91%	64%	50-150%
	13C2-6:2FTS	64%	100%	69%	50-150%
	13C2-8:2FTS	59%	90%	64%	50-150%
	13C3-HFPO-DA	58%	85%	60%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits, Confirmed by re-analysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1007-045.0-20220616
Lab Sample ID: FA96632-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/16/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2048.D	1	07/14/22 02:49	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2049.D	5	07/14/22 03:04	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.025 U [b]	0.050	0.025	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1007-045.0-20220616
Lab Sample ID: FA96632-5 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	64%	50-150%
	13C5-PFPeA	55%	67%	50-150%
	13C5-PFHxA	59%	68%	50-150%
	13C4-PFHpA	59%	68%	50-150%
	13C8-PFOA	61%	71%	50-150%
	13C9-PFNA	60%	69%	50-150%
	13C6-PFDA	59%	66%	50-150%
	13C7-PFUnDA	59%	65%	50-150%
	13C2-PFDoDA	56%	67%	50-150%
	13C2-PFTeDA	52%	60%	50-150%
	13C3-PFBS	59%	68%	50-150%
	13C3-PFHxS	60%	71%	50-150%
	13C8-PFOS	58%	66%	50-150%
	13C8-FOSA	44% [c]	53%	50-150%
	d3-MeFOSAA	62%	69%	50-150%
	d5-EtFOSAA	57%	67%	50-150%
	13C2-4:2FTS	57%	64%	50-150%
	13C2-6:2FTS	62%	67%	50-150%
	13C2-8:2FTS	58%	68%	50-150%
	13C3-HFPO-DA	59%	68%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1008-005.0-20220616		
Lab Sample ID:	FA96632-6	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2050.D	1	07/14/22 03:20	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2442.D	1	07/21/22 04:44	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2051.D	5	07/14/22 03:35	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1008-005.0-20220616
Lab Sample ID: FA96632-6 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	80%	57%	50-150%
	13C5-PFPeA	57%	84%	60%	50-150%
	13C5-PFHxA	60%	88%	61%	50-150%
	13C4-PFHpA	60%	95%	61%	50-150%
	13C8-PFOA	64%	98%	66%	50-150%
	13C9-PFNA	65%	98%	63%	50-150%
	13C6-PFDA	64%	96%	61%	50-150%
	13C7-PFUnDA	64%	93%	62%	50-150%
	13C2-PFDoDA	58%	92%	59%	50-150%
	13C2-PFTeDA	39% [e]	87%	47% [e]	50-150%
	13C3-PFBS	61%	92%	63%	50-150%
	13C3-PFHxS	64%	93%	64%	50-150%
	13C8-PFOS	64%	93%	63%	50-150%
	13C8-FOSA	55%	88%	56%	50-150%
	d3-MeFOSAA	67%	102%	64%	50-150%
	d5-EtFOSAA	65%	104%	67%	50-150%
	13C2-4:2FTS	59%	95%	57%	50-150%
	13C2-6:2FTS	65%	101%	61%	50-150%
	13C2-8:2FTS	60%	95%	58%	50-150%
	13C3-HFPO-DA	58%	90%	59%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1008-015.0-20220616		
Lab Sample ID:	FA96632-7	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2054.D	1	07/14/22 04:21	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2443.D	1	07/21/22 05:00	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2055.D	5	07/14/22 04:36	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [c]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0029	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0035	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0046	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1008-015.0-20220616
Lab Sample ID: FA96632-7 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	42% [e]	82%	52%	50-150%
	13C5-PFPeA	49% [e]	89%	55%	50-150%
	13C5-PFHxA	52%	91%	58%	50-150%
	13C4-PFHpA	53%	97%	60%	50-150%
	13C8-PFOA	57%	100%	63%	50-150%
	13C9-PFNA	57%	99%	63%	50-150%
	13C6-PFDA	59%	102%	67%	50-150%
	13C7-PFUnDA	53%	92%	62%	50-150%
	13C2-PFDoDA	52%	85%	59%	50-150%
	13C2-PFTeDA	44% [e]	74%	53%	50-150%
	13C3-PFBS	54%	95%	59%	50-150%
	13C3-PFHxS	58%	99%	65%	50-150%
	13C8-PFOS	58%	95%	63%	50-150%
	13C8-FOSA	34% [e]	67%	41% [e]	50-150%
	d3-MeFOSAA	62%	96%	68%	50-150%
	d5-EtFOSAA	58%	101%	61%	50-150%
	13C2-4:2FTS	51%	94%	55%	50-150%
	13C2-6:2FTS	59%	103%	62%	50-150%
	13C2-8:2FTS	54%	95%	61%	50-150%
	13C3-HFPO-DA	51%	92%	59%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1008-025.0-20220616
Lab Sample ID: FA96632-8 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2056.D	1	07/14/22 04:52	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2057.D	5	07/14/22 05:07	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0067	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0097	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0102	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0060	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0038	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0303	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0322	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1008-025.0-20220616
Lab Sample ID: FA96632-8 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	72%	50-150%
	13C5-PFPeA	60%	74%	50-150%
	13C5-PFHxA	63%	78%	50-150%
	13C4-PFHpA	65%	78%	50-150%
	13C8-PFOA	68%	81%	50-150%
	13C9-PFNA	67%	82%	50-150%
	13C6-PFDA	70%	80%	50-150%
	13C7-PFUnDA	67%	79%	50-150%
	13C2-PFDoDA	61%	73%	50-150%
	13C2-PFTeDA	56%	67%	50-150%
	13C3-PFBS	64%	78%	50-150%
	13C3-PFHxS	67%	81%	50-150%
	13C8-PFOS	68%	76%	50-150%
	13C8-FOSA	43% [c]	57%	50-150%
	d3-MeFOSAA	70%	85%	50-150%
	d5-EtFOSAA	67%	78%	50-150%
	13C2-4:2FTS	63%	75%	50-150%
	13C2-6:2FTS	72%	78%	50-150%
	13C2-8:2FTS	65%	76%	50-150%
	13C3-HFPO-DA	64%	75%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1008-035.0-20220616		
Lab Sample ID:	FA96632-9	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2058.D	1	07/14/22 05:23	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2444.D	1	07/21/22 05:15	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2059.D	5	07/14/22 05:38	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.040 U [c]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0157	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0056	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0214	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0109	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1008-035.0-20220616
Lab Sample ID: FA96632-9 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	43% [e]	79%	56%	50-150%
	13C5-PFPeA	50%	89%	62%	50-150%
	13C5-PFHxA	54%	96%	67%	50-150%
	13C4-PFHpA	55%	103%	66%	50-150%
	13C8-PFOA	58%	105%	70%	50-150%
	13C9-PFNA	58%	107%	69%	50-150%
	13C6-PFDA	59%	103%	64%	50-150%
	13C7-PFUnDA	53%	101%	63%	50-150%
	13C2-PFDoDA	54%	90%	61%	50-150%
	13C2-PFTeDA	44% [e]	75%	52%	50-150%
	13C3-PFBS	54%	99%	64%	50-150%
	13C3-PFHxS	56%	102%	69%	50-150%
	13C8-PFOS	55%	100%	64%	50-150%
	13C8-FOSA	28% [e]	63%	37% [e]	50-150%
	d3-MeFOSAA	59%	110%	68%	50-150%
	d5-EtFOSAA	57%	106%	67%	50-150%
	13C2-4:2FTS	54%	102%	61%	50-150%
	13C2-6:2FTS	58%	109%	65%	50-150%
	13C2-8:2FTS	56%	100%	61%	50-150%
	13C3-HFPO-DA	54%	86%	62%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1008-045.0-20220616		
Lab Sample ID:	FA96632-10	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2060.D	1	07/14/22 05:53	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2445.D	1	07/21/22 05:31	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2061.D	5	07/14/22 06:09	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0154	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0103	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1008-045.0-20220616		
Lab Sample ID:	FA96632-10	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	55%	68%	67%	50-150%
	13C5-PFPeA	62%	74%	71%	50-150%
	13C5-PFHxA	65%	79%	75%	50-150%
	13C4-PFHpA	68%	82%	74%	50-150%
	13C8-PFOA	71%	89%	76%	50-150%
	13C9-PFNA	72%	88%	78%	50-150%
	13C6-PFDA	71%	84%	71%	50-150%
	13C7-PFUnDA	66%	79%	65%	50-150%
	13C2-PFDoDA	59%	75%	59%	50-150%
	13C2-PFTeDA	34% e	74%	36% e	50-150%
	13C3-PFBS	66%	79%	75%	50-150%
	13C3-PFHxS	70%	83%	77%	50-150%
	13C8-PFOS	68%	84%	73%	50-150%
	13C8-FOSA	36% e	39% e	40% e	50-150%
	d3-MeFOSAA	73%	84%	72%	50-150%
	d5-EtFOSAA	65%	81%	69%	50-150%
	13C2-4:2FTS	68%	83%	68%	50-150%
	13C2-6:2FTS	74%	92%	77%	50-150%
	13C2-8:2FTS	65%	84%	68%	50-150%
	13C3-HFPO-DA	61%	74%	78%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FD-20220616-01		
Lab Sample ID:	FA96632-11	**Date Sampled:**	06/16/22
Matrix:	AQ - Ground Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2062.D	1	07/14/22 06:24	JB	07/06/22 09:15	OP91949	S6Q38
Run #2 [a]	6Q2446.D	1	07/21/22 05:47	JB	07/18/22 09:00	OP92135	S6Q43
Run #3 [b]	6Q2063.D	5	07/14/22 06:39	JB	07/06/22 09:15	OP91949	S6Q38

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0158	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0069	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0042	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0096	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220616-01
Lab Sample ID: FA96632-11 **Date Sampled:** 06/16/22
Matrix: AQ - Ground Water **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	52%	79%	70%	50-150%
	13C5-PFPeA	57%	88%	73%	50-150%
	13C5-PFHxA	62%	93%	76%	50-150%
	13C4-PFHpA	62%	100%	77%	50-150%
	13C8-PFOA	67%	104%	81%	50-150%
	13C9-PFNA	65%	107%	76%	50-150%
	13C6-PFDA	64%	103%	71%	50-150%
	13C7-PFUnDA	61%	92%	64%	50-150%
	13C2-PFDoDA	55%	84%	47% e	50-150%
	13C2-PFTeDA	27% e	70%	17% e	50-150%
	13C3-PFBS	63%	97%	79%	50-150%
	13C3-PFHxS	64%	99%	82%	50-150%
	13C8-PFOS	64%	98%	71%	50-150%
	13C8-FOSA	41% e	56%	46% e	50-150%
	d3-MeFOSAA	67%	106%	71%	50-150%
	d5-EtFOSAA	61%	97%	62%	50-150%
	13C2-4:2FTS	65%	102%	74%	50-150%
	13C2-6:2FTS	69%	110%	77%	50-150%
	13C2-8:2FTS	64%	100%	70%	50-150%
	13C3-HFPO-DA	57%	92%	85%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220616-01
Lab Sample ID: FA96632-12
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/16/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2032.D	1	07/13/22 22:44	JB	07/06/22 09:15	OP91949	S6Q38
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220616-01
Lab Sample ID: FA96632-12 **Date Sampled:** 06/16/22
Matrix: AQ - Equipment Blank **Date Received:** 06/17/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	66%		50-150%
	13C8-PFOA	69%		50-150%
	13C9-PFNA	66%		50-150%
	13C6-PFDA	65%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	62%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	66%		50-150%
	d5-EtFOSAA	68%		50-150%
	13C2-4:2FTS	62%		50-150%
	13C2-6:2FTS	66%		50-150%
	13C2-8:2FTS	61%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220616-01
Lab Sample ID: FA96632-13
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/16/22
Date Received: 06/17/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q2033.D	1	07/13/22 22:59	JB	07/06/22 09:15	OP91949	S6Q38
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FB-20220616-01		
Lab Sample ID:	FA96632-13	**Date Sampled:**	06/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	06/17/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	73%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	75%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	70%		50-150%
	13C2-PFDoDA	65%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	77%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	69%		50-150%
	13C8-FOSA	69%		50-150%
	d3-MeFOSAA	73%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	73%		50-150%
	13C2-8:2FTS	68%		50-150%
	13C3-HFPO-DA	68%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96632

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL_24 analytes + GenX	LAB USE ONLY
1	S118-DPT1007-005.0-20220616	6/16/22	1239	JB	GW	2		X								X	
2	S118-DPT1007-015.0-20220616	6/16/22	1251	JB	GW	2		X								X	
3	S118-DPT1007-025.0-20220616	6/16/22	1308	JB	GW	2		X								X	
4	S118-DPT1007-035.0-20220616	6/16/22	1323	JB	WW	2		X								X	
5	S118-DPT1007-045.0-20220616	6/16/22	1343	JB	WW	2		X								X	
6	S118-DPT1008-005.0-20220616	6/16/22	1459	JB	GW	2		X								X	
7	S118-DPT1008-015.0-20220616	6/16/22	1510	JB	GW	2		X								X	
8	S118-DPT1008-025.0-20220616	6/16/22	1529	JB	GW	2		X								X	
9	S118-DPT1008-035.0-20220616	6/16/22	1543	JB	GW	2		X								X	
10	S118-DPT1008-045.0-20220616	6/16/22	1601	JB	GW	2		X								X	
11	S118-FD-20220616-01	6/16/22	1601	JB	GW	2		X								X	
12	S118-EB-20220616-01	6/16/22	1620	JB	GW	2		X								X	

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT NG
LABEL VERIFICATION SM

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2	3		4 6/17/22 1640
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 3.2C, 1.8C, 4.1C (TM)

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220616 Rev 031318

FA96632

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
13	S118-FB-20220616-01	6/16/22	1625	JB	WW	2		X								X	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6-17-22/1535	2 6/17/2022 15:35	3 6/17/22 18:40		4 6/17/22 1640
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220616 Rev 031318

SGS Sample Receipt Summary

Job Number: FA96632 **Client:** HGL, INC. **Project:** SWMU 118 PFAS ASSESSMENT

Date / Time Received: 6/17/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8); Cooler 3: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2); Cooler 3: (5.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/17/2022 4:40:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96632
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91949	EPA 537M QSM5.3 B-15						
OP91949-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	101	%	73-129
OP91949-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	114	%	72-129
OP91949-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	109	%	72-129
OP91949-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	107	%	72-130
OP91949-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	105	%	71-133
OP91949-BS	375-95-1	Perfluorononanoic acid	BSP	REC	104	%	69-130
OP91949-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	110	%	71-129
OP91949-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	98	%	69-133
OP91949-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP91949-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	104	%	65-144
OP91949-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	110	%	71-132
OP91949-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	107	%	72-130
OP91949-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	106	%	71-127
OP91949-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	108	%	68-131
OP91949-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	113	%	69-134
OP91949-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	118	%	65-140
OP91949-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	111	%	69-127
OP91949-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	96	%	53-142
OP91949-BS	754-91-6	PFOSA	BSP	REC	99	%	67-137
OP91949-BS	2355-31-9	MeFOSAA	BSP	REC	104	%	65-136
OP91949-BS	2991-50-6	EtFOSAA	BSP	REC	111	%	61-135
OP91949-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	106	%	63-143
OP91949-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP91949-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138
OP91949-MS	375-22-4	Perfluorobutanoic acid	MS	REC	110	%	73-129
OP91949-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	119	%	72-129
OP91949-MS	307-24-4	Perfluorohexanoic acid	MS	REC	113	%	72-129
OP91949-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	115	%	72-130
OP91949-MS	335-67-1	Perfluorooctanoic acid	MS	REC	114	%	71-133
OP91949-MS	375-95-1	Perfluorononanoic acid	MS	REC	109	%	69-130
OP91949-MS	335-76-2	Perfluorodecanoic acid	MS	REC	113	%	71-129
OP91949-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	103	%	69-133
OP91949-MS	307-55-1	Perfluorododecanoic acid	MS	REC	110	%	72-134
OP91949-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	102	%	65-144
OP91949-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	113	%	71-132
OP91949-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	115	%	72-130
OP91949-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	119	%	71-127
OP91949-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	119	%	68-131
OP91949-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	114	%	69-134
OP91949-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	119	%	65-140
OP91949-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	121	%	69-127
OP91949-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	98	%	53-142

* Sample used for QC is not from job FA96632

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96632
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91949-MS	754-91-6	PFOSA	MS	REC	110	%	67-137
OP91949-MS	2355-31-9	MeFOSAA	MS	REC	106	%	65-136
OP91949-MS	2991-50-6	EtFOSAA	MS	REC	119	%	61-135
OP91949-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	114	%	63-143
OP91949-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	105	%	64-140
OP91949-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	116	%	67-138
OP91949-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP91949-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP91949-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91949-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91949-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91949-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91949-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91949-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91949-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91949-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91949-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91949-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91949-DUP	754-91-6	PFOSA	DUP	RPD	0 [a]	%	30
OP91949-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91949-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91949-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91949-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91949-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

(a) Outside control limits.

* Sample used for QC is not from job FA96632

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q38-IBLK	6Q2024.D	1	07/13/22	JB	n/a	n/a	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	95%	50-150%

Instrument Blank

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q38-IBLK	6Q2024.D	1	07/13/22	JB	n/a	n/a	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	97%	50-150%
	d3-MeFOSA	96%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	95%	50-150%

Method Blank Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-MB	6Q2031.D	1	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	84%	50-150%
	13C9-PFNA	84%	50-150%
	13C6-PFDA	85%	50-150%

Method Blank Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-MB	6Q2031.D	1	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	82%	50-150%
	13C2-PFDoDA	75%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	82%	50-150%
	d5-EtFOSAA	75%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	86%	50-150%

Blank Spike Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-BS	6Q2030.D	1	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.161	101	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.182	114	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.174	109	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.171	107	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.168	105	71-133
375-95-1	Perfluorononanoic acid	0.16	0.167	104	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.176	110	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.157	98	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.166	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.167	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.176	110	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.171	107	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.169	106	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.173	108	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.181	113	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.188	118	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.178	111	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.153	96	53-142
754-91-6	PFOSA	0.16	0.158	99	67-137
2355-31-9	MeFOSAA	0.16	0.166	104	65-136
2991-50-6	EtFOSAA	0.16	0.177	111	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.169	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.165	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.161	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.181	113	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	88%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	84%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-BS	6Q2030.D	1	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	83%	50-150%
	13C2-PFDoDA	77%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	76%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	89%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-MS	6Q2037.D	1.7	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-1 [a]	6Q2035.D	1.7	07/13/22	JB	07/06/22	OP91949	S6Q38
FA96632-1 [b]	6Q2036.D	8.3	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	Compound	FA96632-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.027	U	0.16	0.176	110	73-129
2706-90-3	Perfluoropentanoic acid	0.014	U	0.16	0.191	119	72-129
307-24-4	Perfluorohexanoic acid	0.014	U	0.16	0.180	113	72-129
375-85-9	Perfluoroheptanoic acid	0.014	U	0.16	0.184	115	72-130
335-67-1	Perfluorooctanoic acid	0.014	U	0.16	0.183	114	71-133
375-95-1	Perfluorononanoic acid	0.014	U	0.16	0.174	109	69-130
335-76-2	Perfluorodecanoic acid	0.014	U	0.16	0.181	113	71-129
2058-94-8	Perfluoroundecanoic acid	0.014	U	0.16	0.164	103	69-133
307-55-1	Perfluorododecanoic acid	0.014	U	0.16	0.176	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.014	U	0.16	0.163	102	65-144
376-06-7	Perfluorotetradecanoic acid	0.014	U	0.16	0.180	113	71-132
375-73-5	Perfluorobutanesulfonic acid	0.014	U	0.16	0.184	115	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.014	U	0.16	0.191	119	71-127
355-46-4	Perfluorohexanesulfonic acid	0.014	U	0.16	0.190	119	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.014	U	0.16	0.183	114	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.014	U	0.16	0.191	119	65-140
68259-12-1	Perfluorononanesulfonic acid	0.014	U	0.16	0.193	121	69-127
335-77-3	Perfluorodecanesulfonic acid	0.014	U	0.16	0.156	98	53-142
754-91-6	PFOSA	0.066	U [c]	0.16	0.176	110	67-137
2355-31-9	MeFOSAA	0.027	U	0.16	0.170	106	65-136
2991-50-6	EtFOSAA	0.027	U	0.16	0.190	119	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.027	U	0.16	0.183	114	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.027	U	0.16	0.168	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.027	U	0.16	0.185	116	67-138
13252-13-6	HFPO-DA (GenX)	0.027	U	0.16	0.224	140	60-140

CAS No.	ID Standard Recoveries	MS	FA96632-1	FA96632-1	Limits
	13C4-PFBA	63%	58%	72%	50-150%
	13C5-PFPeA	70%	66%	75%	50-150%
	13C5-PFHxA	82%	72%	80%	50-150%
	13C4-PFHpA	83%	77%	76%	50-150%
	13C8-PFOA	87%	73%	77%	50-150%
	13C9-PFNA	90%	67%	65%	50-150%
	13C6-PFDA	94%	70%	63%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-MS	6Q2037.D	1.7	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-1 [a]	6Q2035.D	1.7	07/13/22	JB	07/06/22	OP91949	S6Q38
FA96632-1 [b]	6Q2036.D	8.3	07/13/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	ID Standard Recoveries	MS	FA96632-1	FA96632-1	Limits
	13C7-PFUnDA	97%	63%	64%	50-150%
	13C2-PFDoDA	88%	70%	71%	50-150%
	13C2-PFTeDA	66%	62%	56%	50-150%
	13C3-PFBS	85%	77%	84%	50-150%
	13C3-PFHxS	93%	76%	83%	50-150%
	13C8-PFOS	95%	64%	66%	50-150%
	13C8-FOSA	68%	31%* [d]	35%*	50-150%
	d3-MeFOSAA	101%	68%	68%	50-150%
	d5-EtFOSAA	92%	67%	71%	50-150%
	13C2-4:2FTS	93%	77%	77%	50-150%
	13C2-6:2FTS	104%	81%	78%	50-150%
	13C2-8:2FTS	98%	69%	67%	50-150%
	13C3-HFPO-DA		70%	74%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run #2.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-DUP [a]	6Q2043.D	5	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-2 [b]	6Q2038.D	1	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-2 [c]	6Q2039.D	5	07/14/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	Compound	FA96632-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.080 U [d]		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.040 U [d]		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.040 U [d]		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.040 U [d]		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96632-2	FA96632-2	Limits
	13C4-PFBA	60%	42%* [e]	57%	50-150%
	13C5-PFPeA	63%	48%* [e]	61%	50-150%
	13C5-PFHxA	66%	54%	64%	50-150%
	13C4-PFHpA	68%	58%	65%	50-150%
	13C8-PFOA	70%	62%	68%	50-150%
	13C9-PFNA	70%	62%	68%	50-150%
	13C6-PFDA	68%	66%	67%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96632
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91949-DUP [a]	6Q2043.D	5	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-2 [b]	6Q2038.D	1	07/14/22	JB	07/06/22	OP91949	S6Q38
FA96632-2 [c]	6Q2039.D	5	07/14/22	JB	07/06/22	OP91949	S6Q38

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96632-1, FA96632-2, FA96632-3, FA96632-4, FA96632-5, FA96632-6, FA96632-7, FA96632-8, FA96632-9, FA96632-10, FA96632-11, FA96632-12, FA96632-13

CAS No.	ID Standard Recoveries	DUP	FA96632-2	FA96632-2	Limits
	13C7-PFUnDA	65%	65%	68%	50-150%
	13C2-PFDoDA	61%	58%	60%	50-150%
	13C2-PFTeDA	54%	45%* [e]	48%* [e]	50-150%
	13C3-PFBS	67%	56%	64%	50-150%
	13C3-PFHxS	71%	62%	69%	50-150%
	13C8-PFOS	67%	63%	68%	50-150%
	13C8-FOSA	49%* [f]	47%* [e]	52%	50-150%
	d3-MeFOSAA	67%	68%	69%	50-150%
	d5-EtFOSAA	65%	64%	67%	50-150%
	13C2-4:2FTS	63%	55%	60%	50-150%
	13C2-6:2FTS	70%	63%	66%	50-150%
	13C2-8:2FTS	66%	61%	65%	50-150%
	13C3-HFPO-DA		54%	66%	50-150%

(a) Dilution required due to matrix interference.
(b) Insufficient sample for re-extraction.
(c) Dilution required due to matrix interference (ID recovery standard failure).
(d) Result is from Run #2.
(e) Outside control limits.
(f) Associated ID Standard outside control limits due to matrix interference.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA96816

Sampling Date: 06/22/22



Report to:

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Total number of pages in report: 53

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA96816

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96816-1	06/22/22	10:13	JV	06/23/22	AQ	Ground Water	S118-DPT1009-005.0-20220622
FA96816-2	06/22/22	10:29	JV	06/23/22	AQ	Ground Water	S118-DPT1009-015.0-20220622
FA96816-3	06/22/22	10:44	JV	06/23/22	AQ	Ground Water	S118-DPT1009-025.0-20220622
FA96816-4	06/22/22	10:58	JV	06/23/22	AQ	Ground Water	S118-DPT1009-035.0-20220622
FA96816-5	06/22/22	11:15	JV	06/23/22	AQ	Ground Water	S118-DPT1009-045.0-20220622
FA96816-6	06/22/22	14:13	JV	06/23/22	AQ	Ground Water	S118-DPT1010-005.0-20220622
FA96816-7	06/22/22	14:26	JV	06/23/22	AQ	Ground Water	S118-DPT1010-015.0-20220622
FA96816-8	06/22/22	14:38	JV	06/23/22	AQ	Ground Water	S118-DPT1010-025.0-20220622
FA96816-9	06/22/22	14:53	JV	06/23/22	AQ	Ground Water	S118-DPT1010-035.0-20220622
FA96816-10	06/22/22	15:10	JV	06/23/22	AQ	Ground Water	S118-DPT1010-045.0-20220622
FA96816-11	06/22/22	15:10	JV	06/23/22	AQ	Ground Water	S118-FD-20220622-01
FA96816-12	06/22/22	15:36	JV	06/23/22	AQ	Equipment Blank	S118-EB-20220622-01
FA96816-13	06/22/22	15:41	JV	06/23/22	AQ	Field Blank Water	S118-FB-20220622-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96816

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 8/1/2022 3:17:50 PM

On 06/23/2022, 12 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96816 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP92018

Sample(s) FA96816-1MS, FA96816-2DUP, FA96816-1MS were used as the QC samples indicated.

Sample(s) FA96816-1, FA96816-10, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-8, FA96816-9 have surrogates outside control limits.

FA96816-1: Dilution required due to matrix interference (ID recovery standard failure).

FA96816-1: Insufficient sample for re-extraction.

FA96816-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis. Insufficient sample to re-extract.

FA96816-3: Confirmation run.

FA96816-3 for 13C2-PFTeDA: Outside control limits.

FA96816-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96816-4 for 13C2-PFDoDA: Outside control limits.

FA96816-4 for 13C2-PFTeDA: Outside control limits.

FA96816-4 for 13C7-PFUnDA: Outside control limits.

FA96816-4 for d5-EtFOSAA: Outside control limits.

FA96816-4 for EtFOSAA: Associated ID Standard outside control limits.

FA96816-4 for Perfluorodecanesulfonic acid: Associated ID Standard outside control limits.

FA96816-5 for 13C2-PFTeDA: Outside control limits.

FA96816-5 for 13C8-FOSA: Outside control limits.

FA96816-5 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA96816-5 for PFOSA: Associated ID Standard outside control limits.

FA96816-6: Confirmation run.

FA96816-6 for 13C2-PFTeDA: Outside control limits.

FA96816-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96816-8: Confirmation run.

FA96816-8 for 13C2-PFTeDA: Outside control limits.

FA96816-8 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96816-9 for 13C2-PFDoDA: Outside control limits.

FA96816-9 for 13C2-PFTeDA: Outside control limits.

FA96816-10 for 13C2-PFDoDA: Outside control limits.

FA96816-10 for 13C2-PFTeDA: Outside control limits.

FA96816-10 for 13C8-FOSA: Outside control limits.

FA96816-10 for Perfluorododecanoic acid: Associated ID Standard outside control limits.

FA96816-10 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FA96816-10 for PFOSA: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP92188

Sample(s) FA96816-10 have surrogates outside control limits.

FA96816-10: Sample re-extracted beyond hold time.

FA96816-4: Sample re-extracted beyond hold time.

FA96816-9: Sample re-extracted beyond hold time.

Matrix: AQ **Batch ID:** OP92220

FA96816-5: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96816
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96816-1	**S118-DPT1009-005.0-20220622**					
Perfluorobutanoic acid [a]		0.0070 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96816-2	**S118-DPT1009-015.0-20220622**					
Perfluorohexanoic acid		0.0028 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0168	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0426	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FA96816-3	**S118-DPT1009-025.0-20220622**					
Perfluorobutanoic acid		0.0089 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0051 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0140	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0048 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0472	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0026 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0917	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96816-4	**S118-DPT1009-035.0-20220622**					
Perfluorobutanoic acid		0.0047 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0067 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0089	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0052 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0096	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0229	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0152	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96816-5	**S118-DPT1009-045.0-20220622**					
Perfluorohexanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0049 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0093	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96816
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96816-6	**S118-DPT1010-005.0-20220622**					
Perfluorobutanoic acid		0.0894	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0067 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0052 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0072 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0491	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0077 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0063 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0663	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0378	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.166	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96816-7	**S118-DPT1010-015.0-20220622**					
Perfluorobutanesulfonic acid		0.0059 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0038 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0134	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0049 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96816-8	**S118-DPT1010-025.0-20220622**					
Perfluoropentanoic acid		0.0098	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0102	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0040 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0046 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0068 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0076 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0253	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0034 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FA96816-9	**S118-DPT1010-035.0-20220622**					
Perfluoropentanoic acid		0.0089	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0107	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0064 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0068 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0079 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0350	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0072 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96816-10	**S118-DPT1010-045.0-20220622**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA96816
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA96816-11 S118-FD-20220622-01

No hits reported in this sample.

FA96816-12 S118-EB-20220622-01

No hits reported in this sample.

FA96816-13 S118-FB-20220622-01

No hits reported in this sample.

(a) Insufficient sample for re-extraction.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: S118-DPT1009-005.0-20220622
Lab Sample ID: FA96816-1 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q63053.D	1	07/20/22 00:28	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [b]	3Q63119.D	5	07/20/22 21:59	MV	07/11/22 10:57	OP92018	S3Q861

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0070	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-005.0-20220622
Lab Sample ID: FA96816-1 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [d]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%	98%	50-150%
	13C5-PFPeA	58%	93%	50-150%
	13C5-PFHxA	56%	88%	50-150%
	13C4-PFHpA	65%	97%	50-150%
	13C8-PFOA	82%	107%	50-150%
	13C9-PFNA	79%	96%	50-150%
	13C6-PFDA	82%	78%	50-150%
	13C7-PFUnDA	79%	63%	50-150%
	13C2-PFDoDA	65%	46% [e]	50-150%
	13C2-PFTeDA	24% [e]	32% [e]	50-150%
	13C3-PFBS	59%	91%	50-150%
	13C3-PFHxS	76%	103%	50-150%
	13C8-PFOS	74%	88%	50-150%
	13C8-FOSA	44% [e]	69%	50-150%
	d3-MeFOSAA	96%	93%	50-150%
	d5-EtFOSAA	84%	82%	50-150%
	13C2-4:2FTS	60%	96%	50-150%
	13C2-6:2FTS	94%	113%	50-150%
	13C2-8:2FTS	72%	80%	50-150%
	13C3-HFPO-DA	48% [e]	82%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis. Insufficient sample to re-extract.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-015.0-20220622
Lab Sample ID: FA96816-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/22/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63055.D	1	07/20/22 01:05	MV	07/11/22 10:57	OP92018	S3Q860
Run #2							

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087 U	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0028	0.0087	0.0043	0.0022	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0168	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0426	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-015.0-20220622
Lab Sample ID: FA96816-2 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	70%		50-150%
	13C6-PFDA	71%		50-150%
	13C7-PFUnDA	77%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	74%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	75%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	85%		50-150%
	13C2-8:2FTS	73%		50-150%
	13C3-HFPO-DA	70%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-025.0-20220622
Lab Sample ID: FA96816-3 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63059.D	1	07/20/22 02:19	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	3Q63120.D	5	07/20/22 22:17	MV	07/11/22 10:57	OP92018	S3Q861

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0089	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0051	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0140	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0048	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0472	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0026	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0917	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1009-025.0-20220622		
Lab Sample ID:	FA96816-3	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%	67%	50-150%
	13C5-PFPeA	73%	95%	50-150%
	13C5-PFHxA	70%	98%	50-150%
	13C4-PFHpA	77%	102%	50-150%
	13C8-PFOA	86%	108%	50-150%
	13C9-PFNA	75%	97%	50-150%
	13C6-PFDA	74%	82%	50-150%
	13C7-PFUnDA	69%	70%	50-150%
	13C2-PFDoDA	60%	56%	50-150%
	13C2-PFTeDA	43% [c]	42% [c]	50-150%
	13C3-PFBS	71%	96%	50-150%
	13C3-PFHxS	83%	104%	50-150%
	13C8-PFOS	71%	90%	50-150%
	13C8-FOSA	67%	85%	50-150%
	d3-MeFOSAA	81%	95%	50-150%
	d5-EtFOSAA	73%	87%	50-150%
	13C2-4:2FTS	75%	99%	50-150%
	13C2-6:2FTS	90%	108%	50-150%
	13C2-8:2FTS	64%	81%	50-150%
	13C3-HFPO-DA	65%	93%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1009-035.0-20220622		
Lab Sample ID:	FA96816-4	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63060.D	1	07/20/22 02:38	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	2Q95676.D	1	07/25/22 02:37	JB	07/21/22 09:00	OP92188	S2Q1336

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0047	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0067	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0089	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0096	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U [b]	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U [b]	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U [b]	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U [b]	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0152	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA [c]	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1009-035.0-20220622		
Lab Sample ID:	FA96816-4	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%	75%	50-150%
	13C5-PFPeA	70%	84%	50-150%
	13C5-PFHxA	66%	84%	50-150%
	13C4-PFHpA	74%	92%	50-150%
	13C8-PFOA	86%	100%	50-150%
	13C9-PFNA	71%	95%	50-150%
	13C6-PFDA	61%	96%	50-150%
	13C7-PFUnDA	35% [d]	103%	50-150%
	13C2-PFDoDA	10% [d]	94%	50-150%
	13C2-PFTeDA	1% [d]	69%	50-150%
	13C3-PFBS	68%	84%	50-150%
	13C3-PFHxS	81%	87%	50-150%
	13C8-PFOS	60%	90%	50-150%
	13C8-FOSA	51%	74%	50-150%
	d3-MeFOSAA	55%	98%	50-150%
	d5-EtFOSAA	43% [d]	91%	50-150%
	13C2-4:2FTS	71%	83%	50-150%
	13C2-6:2FTS	92%	102%	50-150%
	13C2-8:2FTS	54%	100%	50-150%
	13C3-HFPO-DA	60%	63%	50-150%

(a) Sample re-extracted beyond hold time.
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-045.0-20220622
Lab Sample ID: FA96816-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/22/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63061.D	1	07/20/22 02:57	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	3Q63336.D	1	07/26/22 21:26	MV	07/22/22 09:00	OP92220	S3Q866

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0049	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0093	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1009-045.0-20220622
Lab Sample ID: FA96816-5 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%	87%	50-150%
	13C5-PFPeA	68%	77%	50-150%
	13C5-PFHxA	67%	73%	50-150%
	13C4-PFHpA	78%	83%	50-150%
	13C8-PFOA	96%	93%	50-150%
	13C9-PFNA	84%	91%	50-150%
	13C6-PFDA	83%	88%	50-150%
	13C7-PFUnDA	73%	83%	50-150%
	13C2-PFDoDA	58%	76%	50-150%
	13C2-PFTeDA	29% [c]	61%	50-150%
	13C3-PFBS	68%	74%	50-150%
	13C3-PFHxS	88%	90%	50-150%
	13C8-PFOS	81%	85%	50-150%
	13C8-FOSA	46% [c]	57%	50-150%
	d3-MeFOSAA	85%	100%	50-150%
	d5-EtFOSAA	74%	94%	50-150%
	13C2-4:2FTS	71%	78%	50-150%
	13C2-6:2FTS	102%	96%	50-150%
	13C2-8:2FTS	69%	74%	50-150%
	13C3-HFPO-DA	59%	63%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-005.0-20220622
Lab Sample ID: FA96816-6 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63062.D	1	07/20/22 03:15	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	3Q63125.D	5	07/20/22 23:50	MV	07/11/22 10:57	OP92018	S3Q861

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0894	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0067	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0052	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0072	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0491	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0077	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0063	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0663	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0378	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.166	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1010-005.0-20220622		
Lab Sample ID:	FA96816-6	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	69%	70%	50-150%
	13C5-PFPeA	62%	67%	50-150%
	13C5-PFHxA	61%	68%	50-150%
	13C4-PFHpA	67%	71%	50-150%
	13C8-PFOA	74%	74%	50-150%
	13C9-PFNA	58%	62%	50-150%
	13C6-PFDA	67%	65%	50-150%
	13C7-PFUnDA	69%	58%	50-150%
	13C2-PFDoDA	59%	43% [c]	50-150%
	13C2-PFTeDA	49% [c]	25% [c]	50-150%
	13C3-PFBS	61%	70%	50-150%
	13C3-PFHxS	71%	72%	50-150%
	13C8-PFOS	65%	67%	50-150%
	13C8-FOSA	62%	58%	50-150%
	d3-MeFOSAA	84%	76%	50-150%
	d5-EtFOSAA	84%	75%	50-150%
	13C2-4:2FTS	64%	67%	50-150%
	13C2-6:2FTS	81%	75%	50-150%
	13C2-8:2FTS	66%	63%	50-150%
	13C3-HFPO-DA	56%	66%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-015.0-20220622
Lab Sample ID: FA96816-7 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63063.D	1	07/20/22 03:34	MV	07/11/22 10:57	OP92018	S3Q860
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0059	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0038	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0134	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0049	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-015.0-20220622
Lab Sample ID: FA96816-7 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	77%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	68%		50-150%
	13C6-PFDA	63%		50-150%
	13C7-PFUnDA	58%		50-150%
	13C2-PFDoDA	52%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	65%		50-150%
	13C8-FOSA	69%		50-150%
	d3-MeFOSAA	68%		50-150%
	d5-EtFOSAA	65%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	84%		50-150%
	13C2-8:2FTS	64%		50-150%
	13C3-HFPO-DA	67%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-025.0-20220622
Lab Sample ID: FA96816-8 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63064.D	1	07/20/22 03:52	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	3Q63126.D	5	07/21/22 00:09	MV	07/11/22 10:57	OP92018	S3Q861

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087 U	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0098	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0102	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040	0.0087	0.0043	0.0022	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0046	0.0087	0.0043	0.0022	ug/l	J
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0068	0.0087	0.0043	0.0022	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0076	0.0087	0.0043	0.0022	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0253	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0087	0.0043	0.0022	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1010-025.0-20220622		
Lab Sample ID:	FA96816-8	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%	66%	50-150%
	13C5-PFPeA	74%	81%	50-150%
	13C5-PFHxA	71%	81%	50-150%
	13C4-PFHpA	80%	86%	50-150%
	13C8-PFOA	90%	88%	50-150%
	13C9-PFNA	73%	80%	50-150%
	13C6-PFDA	76%	78%	50-150%
	13C7-PFUnDA	72%	75%	50-150%
	13C2-PFDoDA	63%	63%	50-150%
	13C2-PFTeDA	49% [c]	27% [c]	50-150%
	13C3-PFBS	71%	81%	50-150%
	13C3-PFHxS	86%	86%	50-150%
	13C8-PFOS	73%	80%	50-150%
	13C8-FOSA	55%	61%	50-150%
	d3-MeFOSAA	86%	89%	50-150%
	d5-EtFOSAA	79%	87%	50-150%
	13C2-4:2FTS	76%	80%	50-150%
	13C2-6:2FTS	93%	87%	50-150%
	13C2-8:2FTS	69%	74%	50-150%
	13C3-HFPO-DA	66%	78%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-035.0-20220622
Lab Sample ID: FA96816-9 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63065.D	1	07/20/22 04:11	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	2Q95677.D	1	07/25/22 02:53	JB	07/21/22 09:00	OP92188	S2Q1336

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0089	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0107	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0064	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U [b]	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U [b]	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U [b]	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0068	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0079	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0350	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0072	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-DPT1010-035.0-20220622
Lab Sample ID: FA96816-9 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%	84%	50-150%
	13C5-PFPeA	79%	82%	50-150%
	13C5-PFHxA	77%	84%	50-150%
	13C4-PFHpA	86%	91%	50-150%
	13C8-PFOA	95%	98%	50-150%
	13C9-PFNA	80%	96%	50-150%
	13C6-PFDA	74%	95%	50-150%
	13C7-PFUnDA	55%	102%	50-150%
	13C2-PFDoDA	24% [c]	90%	50-150%
	13C2-PFTeDA	3% [c]	65%	50-150%
	13C3-PFBS	77%	80%	50-150%
	13C3-PFHxS	90%	87%	50-150%
	13C8-PFOS	68%	93%	50-150%
	13C8-FOSA	60%	55%	50-150%
	d3-MeFOSAA	76%	95%	50-150%
	d5-EtFOSAA	66%	89%	50-150%
	13C2-4:2FTS	82%	82%	50-150%
	13C2-6:2FTS	100%	101%	50-150%
	13C2-8:2FTS	65%	99%	50-150%
	13C3-HFPO-DA	68%	63%	50-150%

(a) Sample re-extracted beyond hold time.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1010-045.0-20220622		
Lab Sample ID:	FA96816-10	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63066.D	1	07/20/22 04:29	MV	07/11/22 10:57	OP92018	S3Q860
Run #2 [a]	2Q95680.D	1	07/25/22 03:43	JB	07/21/22 09:00	OP92188	S2Q1336

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U [c]	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-DPT1010-045.0-20220622		
Lab Sample ID:	FA96816-10	**Date Sampled:**	06/22/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%	92%	50-150%
	13C5-PFPeA	73%	90%	50-150%
	13C5-PFHxA	69%	91%	50-150%
	13C4-PFHpA	73%	96%	50-150%
	13C8-PFOA	79%	103%	50-150%
	13C9-PFNA	67%	99%	50-150%
	13C6-PFDA	67%	100%	50-150%
	13C7-PFUnDA	61%	103%	50-150%
	13C2-PFDoDA	47% d	87%	50-150%
	13C2-PFTeDA	8% d	46%	50-150%
	13C3-PFBS	70%	87%	50-150%
	13C3-PFHxS	75%	93%	50-150%
	13C8-PFOS	64%	95%	50-150%
	13C8-FOSA	47% d	61%	50-150%
	d3-MeFOSAA	72%	98%	50-150%
	d5-EtFOSAA	66%	89%	50-150%
	13C2-4:2FTS	73%	89%	50-150%
	13C2-6:2FTS	82%	105%	50-150%
	13C2-8:2FTS	56%	103%	50-150%
	13C3-HFPO-DA	64%	71%	50-150%

(a) Sample re-extracted beyond hold time.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220622-01
Lab Sample ID: FA96816-11 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63067.D	1	07/20/22 04:48	MV	07/11/22 10:57	OP92018	S3Q860
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220622-01
Lab Sample ID: FA96816-11 **Date Sampled:** 06/22/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%		50-150%
	13C5-PFPeA	76%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	79%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	74%		50-150%
	13C6-PFDA	73%		50-150%
	13C7-PFUnDA	71%		50-150%
	13C2-PFDoDA	61%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	61%		50-150%
	d3-MeFOSAA	82%		50-150%
	d5-EtFOSAA	76%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	68%		50-150%
	13C3-HFPO-DA	67%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220622-01
Lab Sample ID: FA96816-12
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/22/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63068.D	1	07/20/22 05:07	MV	07/11/22 10:57	OP92018	S3Q860
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220622-01
Lab Sample ID: FA96816-12 **Date Sampled:** 06/22/22
Matrix: AQ - Equipment Blank **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	85%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	79%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	75%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	78%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	87%		50-150%
	13C2-4:2FTS	78%		50-150%
	13C2-6:2FTS	84%		50-150%
	13C2-8:2FTS	74%		50-150%
	13C3-HFPO-DA	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220622-01
Lab Sample ID: FA96816-13
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/22/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q63071.D	1	07/20/22 06:02	MV	07/11/22 10:57	OP92018	S3Q860
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220622-01
Lab Sample ID: FA96816-13 **Date Sampled:** 06/22/22
Matrix: AQ - Field Blank Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	80%		50-150%
	13C5-PFHxA	79%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	73%		50-150%
	13C6-PFDA	67%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	70%		50-150%
	13C2-PFTeDA	71%		50-150%
	13C3-PFBS	79%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSAA	81%		50-150%
	d5-EtFOSAA	81%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	73%		50-150%
	13C2-8:2FTS	65%		50-150%
	13C3-HFPO-DA	78%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96816

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL
Address: 2405 N. Courtney Pkwy, STE 203
City: Merritt Island State: FL Zip: 32937
Project Contact: Denise Rivers Email: drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: J.Vujak Sampler 2:

Project Information

Project Name: PFAS Site Characterization
Street: Kennedy Space Center
City: Merritt Island State: FL
Project #: NS1010.01.06
Fax #:
Client Purchase Order #:

Analytical Information

Leas MS/MSD Bottles + Gen-X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LAB USE ONLY
1	S118-DPT1009-005.0-20220622	6/22/22	1013	JV	GW	2		X								
2	S118-DPT1009-015.0-20220622		1029													
3	S118-DPT1009-025.0-20220622		1044													
4	S118-DPT1009-035.0-20220622		1058													
5	S118-DPT1009-045.0-20220622		1115													
6	S118-DPT1010-005.0-20220622		1413													
7	S118-DPT1010-015.0-20220622		1426													
8	S118-DPT1010-025.0-20220622		1438													
9	S118-DPT1010-035.0-20220622		1453													
10	S118-DPT1010-045.0-20220622		1510													
11	S118-FD-20220622-01		1510													
12	S118-EB-20220622-01		1536		WW											

INITIAL ASSESSMENT

LABEL VERIFICATION

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		6-23-22 1430	2	3 6/23/22 14:30	4 6/23/22 15:50	
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

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FA96816

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL
Address: 2405 N. Courtney Pkwy, STE 203
City: Merritt Island State: FL Zip: 32937
Project Contact: Denise Rivers Email: drivers@hgl.com
Phone #: 910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1: J.Vaught Sampler 2:

Project Information

Project Name: PFAS Site Characterization
Street: Kennedy Space Center
City: Merritt Island State: FL
Project #: NS1010.01.06
Fax #:
Client Purchase Order #:

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	Ls/SM537 Mod PFC, LCMS/MS	+ 6ea X	LAB USE ONLY
13	SI18-FB-20220622-01	6/22/22	1541	JV	WW	2		X								X	X	
14	SO14-DPT1020-015.0-20220622		1630		GW													
15	SO14-DPT1020-025.0-20220622		1640															
16	SO14-DPT1020-035.0-20220622		1654															
17	SO14-DPT1020-045.0-20220622		1713															
18	SO14-FD-20220622-01		1713															
19	SO14-EB-20220622-01		1718															
20	SO14-FB-20220622-01	↓	1723	↓	↓	↓		↓								↓	↓	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		6-23-22/1430	2	3	6/23/22 15:30	4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA96816: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FA96816 **Client:** HGL **Project:** PFAS SITE CHARACTERIZATION

Date / Time Received: 6/23/2022 3:50:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (1.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/23/2022 3:50:00 PM Reviewer: _____ Date: _____

FA96816: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96816
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92018	EPA 537M QSM5.3 B-15						
OP92018-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	99	%	73-129
OP92018-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	106	%	72-129
OP92018-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	104	%	72-129
OP92018-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	106	%	72-130
OP92018-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	104	%	71-133
OP92018-BS	375-95-1	Perfluorononanoic acid	BSP	REC	103	%	69-130
OP92018-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	104	%	71-129
OP92018-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	103	%	69-133
OP92018-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	107	%	72-134
OP92018-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	118	%	65-144
OP92018-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	112	%	71-132
OP92018-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	105	%	72-130
OP92018-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	105	%	71-127
OP92018-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	107	%	68-131
OP92018-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	108	%	69-134
OP92018-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	104	%	65-140
OP92018-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	101	%	69-127
OP92018-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	96	%	53-142
OP92018-BS	754-91-6	PFOSA	BSP	REC	107	%	67-137
OP92018-BS	2355-31-9	MeFOSAA	BSP	REC	103	%	65-136
OP92018-BS	2991-50-6	EtFOSAA	BSP	REC	111	%	61-135
OP92018-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	107	%	63-143
OP92018-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP92018-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	103	%	67-138
OP92018-MS	375-22-4	Perfluorobutanoic acid	MS	REC	103	%	73-129
OP92018-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	119	%	72-129
OP92018-MS	307-24-4	Perfluorohexanoic acid	MS	REC	109	%	72-129
OP92018-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	114	%	72-130
OP92018-MS	335-67-1	Perfluorooctanoic acid	MS	REC	116	%	71-133
OP92018-MS	375-95-1	Perfluorononanoic acid	MS	REC	109	%	69-130
OP92018-MS	335-76-2	Perfluorodecanoic acid	MS	REC	111	%	71-129
OP92018-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	110	%	69-133
OP92018-MS	307-55-1	Perfluorododecanoic acid	MS	REC	110	%	72-134
OP92018-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	129	%	65-144
OP92018-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	112	%	71-132
OP92018-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	113	%	72-130
OP92018-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	118	%	71-127
OP92018-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	118	%	68-131
OP92018-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	110	%	69-134
OP92018-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	112	%	65-140
OP92018-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	122	%	69-127
OP92018-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	97	%	53-142

* Sample used for QC is not from job FA96816

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96816
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92018-MS	754-91-6	PFOSA	MS	REC	111	%	67-137
OP92018-MS	2355-31-9	MeFOSAA	MS	REC	116	%	65-136
OP92018-MS	2991-50-6	EtFOSAA	MS	REC	123	%	61-135
OP92018-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	114	%	63-143
OP92018-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	108	%	64-140
OP92018-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	111	%	67-138
OP92018-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP92018-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP92018-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	11	%	30
OP92018-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP92018-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP92018-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP92018-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP92018-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP92018-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP92018-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP92018-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP92018-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP92018-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP92018-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	9	%	30
OP92018-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP92018-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	6	%	30
OP92018-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP92018-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP92018-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP92018-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP92018-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP92018-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP92018-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP92018-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA96816

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q860-IBLK	3Q63030.D	1	07/19/22	MV	n/a	n/a	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	88%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	85%	50-150%

Instrument Blank

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q860-IBLK	3Q63030.D	1	07/19/22	MV	n/a	n/a	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	86%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	85%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSA	88%	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	95%	50-150%
	13C2-4:2FTS	80%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	81%	50-150%

Instrument Blank

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q861-IBLK	3Q63084.D	1	07/20/22	MV	n/a	n/a	S3Q861

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1

CAS No.	Compound	Result	RL	MDL	Units	Q
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	104%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	113%	50-150%
	d5-EtFOSAA	117%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	109%	50-150%

Method Blank Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-MB	3Q63052.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	107%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	99%	50-150%

Method Blank Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-MB	3Q63052.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	84%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	103%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	104%	50-150%

Blank Spike Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-BS	3Q63051.D	1	07/19/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.159	99	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.170	106	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.167	104	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.169	106	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.166	104	71-133
375-95-1	Perfluorononanoic acid	0.16	0.164	103	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.167	104	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.164	103	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.171	107	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.188	118	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.179	112	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.168	105	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.168	105	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.171	107	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.172	108	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.167	104	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.161	101	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.153	96	53-142
754-91-6	PFOSA	0.16	0.171	107	67-137
2355-31-9	MeFOSAA	0.16	0.164	103	65-136
2991-50-6	EtFOSAA	0.16	0.178	111	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.171	107	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.165	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.165	103	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.155	97	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-BS	3Q63051.D	1	07/19/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	66%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	85%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-MS	3Q63054.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-1 [a]	3Q63053.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-1 [b]	3Q63119.D	5	07/20/22	MV	07/11/22	OP92018	S3Q861

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	Compound	FA96816-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0070	J	0.16	0.171	103	73-129
2706-90-3	Perfluoropentanoic acid	0.0020	J	0.16	0.192	119	72-129
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.175	109	72-129
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.182	114	72-130
335-67-1	Perfluorooctanoic acid	0.0080	U	0.16	0.185	116	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.175	109	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.178	111	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.176	110	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.176	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.207	129	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.179	112	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0040	J	0.16	0.185	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.188	118	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0040	J	0.16	0.192	118	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.176	110	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0026	J	0.16	0.181	112	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.195	122	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.155	97	53-142
754-91-6	PFOSA	0.040	U [c]	0.16	0.178	111	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.186	116	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.196	123	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.183	114	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.173	108	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.178	111	67-138
13252-13-6	HFPO-DA (GenX)	0.080	U [c]	0.16	0.195	122	60-140

CAS No.	ID Standard Recoveries	MS	FA96816-1	FA96816-1	Limits
	13C4-PFBA	75%	77%	98%	50-150%
	13C5-PFPeA	58%	58%	93%	50-150%
	13C5-PFHxA	56%	56%	88%	50-150%
	13C4-PFHpA	64%	65%	97%	50-150%
	13C8-PFOA	80%	82%	107%	50-150%
	13C9-PFNA	78%	79%	96%	50-150%
	13C6-PFDA	84%	82%	78%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-MS	3Q63054.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-1 [a]	3Q63053.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-1 [b]	3Q63119.D	5	07/20/22	MV	07/11/22	OP92018	S3Q861

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	ID Standard Recoveries	MS	FA96816-1	FA96816-1	Limits
	13C7-PFUnDA	85%	79%	63%	50-150%
	13C2-PFDoDA	78%	65%	46%* [d]	50-150%
	13C2-PFTeDA	62%	24%* [d]	32%* [d]	50-150%
	13C3-PFBS	58%	59%	91%	50-150%
	13C3-PFHxS	74%	76%	103%	50-150%
	13C8-PFOS	77%	74%	88%	50-150%
	13C8-FOSA	43%* [d]	44%* [d]	69%	50-150%
	d3-MeFOSAA	100%	96%	93%	50-150%
	d5-EtFOSAA	89%	84%	82%	50-150%
	13C2-4:2FTS	64%	60%	96%	50-150%
	13C2-6:2FTS	96%	94%	113%	50-150%
	13C2-8:2FTS	79%	72%	80%	50-150%
	13C3-HFPO-DA	49%* [d]	48%* [d]	82%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run #2.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-DUP	3Q63056.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-2	3Q63055.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	Compound	FA96816-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.017	U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0087	U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0028	J	0.0025	J	11	30
375-85-9	Perfluoroheptanoic acid	0.0087	U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0087	U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0087	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0087	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0087	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0087	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0087	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0087	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0087	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0087	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0168		0.0153		9	30
375-92-8	Perfluoroheptanesulfonic acid	0.0087	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0426		0.0402		6	30
68259-12-1	Perfluorononanesulfonic acid	0.0087	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0087	U	ND		nc	30
754-91-6	PFOSA	0.0087	U	ND		nc	30
2355-31-9	MeFOSAA	0.017	U	ND		nc	30
2991-50-6	EtFOSAA	0.017	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96816-2	Limits
	13C4-PFBA	95%	82%	50-150%
	13C5-PFPeA	89%	78%	50-150%
	13C5-PFHxA	87%	76%	50-150%
	13C4-PFHpA	91%	78%	50-150%
	13C8-PFOA	97%	83%	50-150%
	13C9-PFNA	81%	70%	50-150%
	13C6-PFDA	83%	71%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96816
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92018-DUP	3Q63056.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860
FA96816-2	3Q63055.D	1	07/20/22	MV	07/11/22	OP92018	S3Q860

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96816-1, FA96816-2, FA96816-3, FA96816-4, FA96816-5, FA96816-6, FA96816-7, FA96816-8, FA96816-9, FA96816-10, FA96816-11, FA96816-12, FA96816-13

CAS No.	ID Standard Recoveries	DUP	FA96816-2	Limits
	13C7-PFUnDA	83%	77%	50-150%
	13C2-PFDoDA	73%	73%	50-150%
	13C2-PFTeDA	60%	74%	50-150%
	13C3-PFBS	84%	73%	50-150%
	13C3-PFHxS	91%	80%	50-150%
	13C8-PFOS	79%	73%	50-150%
	13C8-FOSA	76%	75%	50-150%
	d3-MeFOSAA	98%	85%	50-150%
	d5-EtFOSAA	95%	86%	50-150%
	13C2-4:2FTS	87%	76%	50-150%
	13C2-6:2FTS	97%	85%	50-150%
	13C2-8:2FTS	77%	73%	50-150%
	13C3-HFPO-DA		70%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

NASA TQN 21- SLF PFAS Assessment

NS1010.01.06

SGS Job Number: FA96817

Sampling Date: 06/23/22



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Total number of pages in report: **41**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

Sample Summary

Hydrogeologic, Inc.

Job No: FA96817

NASA TQN 21- SLF PFAS Assessment
Project No: NS1010.01.06

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96817-1	06/23/22	10:20	JB	06/23/22	AQ	Ground Water	S118-SW0005-000.0-20220623
FA96817-2	06/23/22	10:33	JB	06/23/22	AQ	Ground Water	S118-SW0006-000.0-20220623
FA96817-3	06/23/22	10:33	JB	06/23/22	AQ	Ground Water	S118-FD-20220623-01
FA96817-4	06/23/22	10:44	JB	06/23/22	AQ	Ground Water	S118-SW0007-000.0-20220623
FA96817-5	06/23/22	10:55	JB	06/23/22	AQ	Equipment Blank	S118-EB-20220623-01
FA96817-6	06/23/22	11:00	JB	06/23/22	AQ	Field Blank Water	S118-FB-20220623-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc. **Job No:** FA96817

Site: NASA TQN 21- SLF PFAS Assessment **Report Date:** 7/29/2022 11:28:08 AM

On 06/23/2022, 5 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96817 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP92048

Sample(s) FA96827-2MS, FA96827-2MSD were used as the QC samples indicated.

Sample(s) FA96817-1, FA96817-2, FA96817-3, FA96817-4 have surrogates outside control limits.

FA96817-1 for 13C2-PFTeDA: Outside control limits.

FA96817-1 for 13C3-HFPO-DA: Outside control limits.

FA96817-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA96817-1: Dilution required due to matrix interference (ID recovery standard failure).

FA96817-2 for 13C2-PFTeDA: Outside control limits.

FA96817-2 for 13C3-HFPO-DA: Outside control limits.

FA96817-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA96817-2: Dilution required due to matrix interference (ID recovery standard failure).

FA96817-3 for 13C2-PFTeDA: Outside control limits.

FA96817-3 for 13C3-HFPO-DA: Outside control limits.

FA96817-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FA96817-3: Dilution required due to matrix interference (ID recovery standard failure).

FA96817-4 for 13C4-PFBA: Outside control limits.

FA96817-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FA96817-4: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP92220

FA96817-1: Confirmation run.

FA96817-2: Confirmation run.

FA96817-3: Confirmation run.

FA96817-4: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96817
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/23/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96817-1	**S118-SW0005-000.0-20220623**					
Perfluorobutanoic acid		0.0145 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0173	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0037 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0036 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0055 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0070 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0750	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.165	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96817-2	**S118-SW0006-000.0-20220623**					
Perfluorobutanoic acid		0.0167	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0123	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0414	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0075 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.010	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0131	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0166	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.174	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0106	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.541	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96817-3	**S118-FD-20220623-01**					
Perfluorobutanoic acid		0.0219	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0133	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0442	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0077 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0111	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0135	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0175	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.182	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0095	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.562	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96817-4	**S118-SW0007-000.0-20220623**					
Perfluorobutanoic acid [a]		0.0133 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0076 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0193	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0037 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0069 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0063 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96817
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/23/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanesulfonic acid		0.0093	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.107	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0097	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.708	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

FA96817-5 **S118-EB-20220623-01**

No hits reported in this sample.

FA96817-6 **S118-FB-20220623-01**

No hits reported in this sample.

(a) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	S118-SW0005-000.0-20220623		
Lab Sample ID:	FA96817-1	**Date Sampled:**	06/23/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95268.D	1	07/19/22 23:37	JB	07/12/22 10:05	OP92048	S2Q1331
Run #2 [a]	3Q63337.D	1	07/26/22 21:44	MV	07/22/22 09:00	OP92220	S3Q866
Run #3 [b]	2Q95318.D	5	07/20/22 18:57	JB	07/12/22 10:05	OP92048	S2Q1332

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0145	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0173	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0037	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0036	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0055	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0070	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0750	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.165	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0005-000.0-20220623
Lab Sample ID: FA96817-1 **Date Sampled:** 06/23/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.042 U [d]	0.083	0.042	0.021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	57%	86%	71%	50-150%
	13C5-PFPeA	59%	73%	76%	50-150%
	13C5-PFHxA	62%	73%	78%	50-150%
	13C4-PFHpA	69%	82%	84%	50-150%
	13C8-PFOA	78%	96%	86%	50-150%
	13C9-PFNA	76%	93%	84%	50-150%
	13C6-PFDA	75%	96%	81%	50-150%
	13C7-PFUnDA	71%	93%	74%	50-150%
	13C2-PFDoDA	60%	84%	61%	50-150%
	13C2-PFTeDA	39% [e]	68%	37% [e]	50-150%
	13C3-PFBS	61%	75%	77%	50-150%
	13C3-PFHxS	69%	94%	86%	50-150%
	13C8-PFOS	71%	90%	80%	50-150%
	13C8-FOSA	55%	41% [e]	62%	50-150%
	d3-MeFOSAA	84%	118%	83%	50-150%
	d5-EtFOSAA	79%	106%	77%	50-150%
	13C2-4:2FTS	63%	81%	79%	50-150%
	13C2-6:2FTS	79%	106%	86%	50-150%
	13C2-8:2FTS	82%	87%	79%	50-150%
	13C3-HFPO-DA	47% [e]	61%	64%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0006-000.0-20220623		
Lab Sample ID:	FA96817-2	**Date Sampled:**	06/23/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95269.D	1	07/19/22 23:54	JB	07/12/22 10:05	OP92048	S2Q1331
Run #2 [a]	3Q63338.D	1	07/26/22 22:03	MV	07/22/22 09:00	OP92220	S3Q866
Run #3 [b]	2Q95319.D	5	07/20/22 19:13	JB	07/12/22 10:05	OP92048	S2Q1332

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0167	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0123	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0414	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0075	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.010	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0131	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0166	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.174	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0106	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.541	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0006-000.0-20220623
Lab Sample ID: FA96817-2 **Date Sampled:** 06/23/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.040 U [d]	0.080	0.040	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	60%	91%	75%	50-150%
	13C5-PFPeA	58%	75%	76%	50-150%
	13C5-PFHxA	62%	74%	77%	50-150%
	13C4-PFHpA	71%	87%	83%	50-150%
	13C8-PFOA	80%	102%	86%	50-150%
	13C9-PFNA	77%	102%	81%	50-150%
	13C6-PFDA	76%	107%	77%	50-150%
	13C7-PFUnDA	72%	107%	69%	50-150%
	13C2-PFDoDA	61%	102%	55%	50-150%
	13C2-PFTeDA	40% [e]	85%	25% [e]	50-150%
	13C3-PFBS	60%	77%	76%	50-150%
	13C3-PFHxS	68%	99%	87%	50-150%
	13C8-PFOS	73%	97%	75%	50-150%
	13C8-FOSA	54%	57%	58%	50-150%
	d3-MeFOSAA	87%	137%	81%	50-150%
	d5-EtFOSAA	79%	126%	77%	50-150%
	13C2-4:2FTS	63%	84%	79%	50-150%
	13C2-6:2FTS	85%	115%	86%	50-150%
	13C2-8:2FTS	81%	98%	78%	50-150%
	13C3-HFPO-DA	49% [e]	62%	58%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-FD-20220623-01		
Lab Sample ID:	FA96817-3	**Date Sampled:**	06/23/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95270.D	1	07/20/22 00:10	JB	07/12/22 10:05	OP92048	S2Q1331
Run #2 [a]	3Q63339.D	1	07/26/22 22:21	MV	07/22/22 09:00	OP92220	S3Q866
Run #3 [b]	2Q95320.D	5	07/20/22 19:30	JB	07/12/22 10:05	OP92048	S2Q1332

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0219	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0133	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0442	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0111	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0135	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0175	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.182	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0095	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.562	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FD-20220623-01
Lab Sample ID: FA96817-3 **Date Sampled:** 06/23/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.042 U [d]	0.083	0.042	0.021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	57%	88%	70%	50-150%
	13C5-PFPeA	58%	74%	75%	50-150%
	13C5-PFHxA	63%	73%	76%	50-150%
	13C4-PFHpA	72%	84%	82%	50-150%
	13C8-PFOA	81%	98%	85%	50-150%
	13C9-PFNA	76%	97%	78%	50-150%
	13C6-PFDA	75%	102%	75%	50-150%
	13C7-PFUnDA	72%	105%	68%	50-150%
	13C2-PFDoDA	65%	97%	53%	50-150%
	13C2-PFTeDA	35% [e]	76%	17% [e]	50-150%
	13C3-PFBS	61%	76%	78%	50-150%
	13C3-PFHxS	69%	95%	79%	50-150%
	13C8-PFOS	69%	94%	71%	50-150%
	13C8-FOSA	53%	48% [e]	58%	50-150%
	d3-MeFOSAA	81%	132%	78%	50-150%
	d5-EtFOSAA	77%	120%	74%	50-150%
	13C2-4:2FTS	64%	82%	78%	50-150%
	13C2-6:2FTS	83%	114%	85%	50-150%
	13C2-8:2FTS	78%	96%	73%	50-150%
	13C3-HFPO-DA	48% [e]	60%	57%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-SW0007-000.0-20220623		
Lab Sample ID:	FA96817-4	**Date Sampled:**	06/23/22
Matrix:	AQ - Ground Water	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95271.D	1	07/20/22 00:27	JB	07/12/22 10:05	OP92048	S2Q1331
Run #2 [a]	3Q63340.D	1	07/26/22 22:40	MV	07/22/22 09:00	OP92220	S3Q866
Run #3 [b]	2Q95321.D	5	07/20/22 19:46	JB	07/12/22 10:05	OP92048	S2Q1332

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0133	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0076	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0193	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0037	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0069	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0063	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0093	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.107	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0097	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.708	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-SW0007-000.0-20220623
Lab Sample ID: FA96817-4 **Date Sampled:** 06/23/22
Matrix: AQ - Ground Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	38% d	68%	45% d	50-150%
	13C5-PFPeA	64%	82%	81%	50-150%
	13C5-PFHxA	68%	80%	83%	50-150%
	13C4-PFHpA	77%	93%	88%	50-150%
	13C8-PFOA	87%	109%	93%	50-150%
	13C9-PFNA	84%	104%	88%	50-150%
	13C6-PFDA	83%	105%	85%	50-150%
	13C7-PFUnDA	84%	111%	83%	50-150%
	13C2-PFDoDA	78%	104%	74%	50-150%
	13C2-PFTeDA	52%	82%	43% d	50-150%
	13C3-PFBS	66%	84%	87%	50-150%
	13C3-PFHxS	73%	105%	94%	50-150%
	13C8-PFOS	77%	99%	81%	50-150%
	13C8-FOSA	62%	73%	67%	50-150%
	d3-MeFOSAA	92%	140%	93%	50-150%
	d5-EtFOSAA	88%	126%	85%	50-150%
	13C2-4:2FTS	68%	89%	82%	50-150%
	13C2-6:2FTS	87%	122%	91%	50-150%
	13C2-8:2FTS	89%	101%	84%	50-150%
	13C3-HFPO-DA	50%	68%	65%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-EB-20220623-01
Lab Sample ID: FA96817-5
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/23/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95681.D	1	07/25/22 04:00	JB	07/21/22 09:00	OP92188	S2Q1336
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S118-EB-20220623-01		
Lab Sample ID:	FA96817-5	**Date Sampled:**	06/23/22
Matrix:	AQ - Equipment Blank	**Date Received:**	06/23/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA TQN 21- SLF PFAS Assessment		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		50-150%
	13C5-PFPeA	98%		50-150%
	13C5-PFHxA	98%		50-150%
	13C4-PFHpA	99%		50-150%
	13C8-PFOA	98%		50-150%
	13C9-PFNA	92%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	106%		50-150%
	13C2-PFDoDA	101%		50-150%
	13C2-PFTeDA	92%		50-150%
	13C3-PFBS	95%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	82%		50-150%
	d3-MeFOSAA	95%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	95%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	78%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220623-01
Lab Sample ID: FA96817-6
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA TQN 21- SLF PFAS Assessment

Date Sampled: 06/23/22
Date Received: 06/23/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q95682.D	1	07/25/22 04:16	JB	07/21/22 09:00	OP92188	S2Q1336
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S118-FB-20220623-01
Lab Sample ID: FA96817-6 **Date Sampled:** 06/23/22
Matrix: AQ - Field Blank Water **Date Received:** 06/23/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA TQN 21- SLF PFAS Assessment

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	98%		50-150%
	13C5-PFPeA	101%		50-150%
	13C5-PFHxA	101%		50-150%
	13C4-PFHpA	102%		50-150%
	13C8-PFOA	104%		50-150%
	13C9-PFNA	99%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	108%		50-150%
	13C2-PFDoDA	104%		50-150%
	13C2-PFTeDA	95%		50-150%
	13C3-PFBS	98%		50-150%
	13C3-PFHxS	96%		50-150%
	13C8-PFOS	93%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSAA	101%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	96%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	80%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA96817

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: HGL, Inc.
Address: 2405 N. Courtney Parkway, STE 203
City: Merrit Island State: FL Zip:32953
Project Contact: Denise Rivers Email:drivers@hgl.com
Phone #:910-233-8460
Sampler(s) Name(s) (Printed)
Sampler 1:Jason Bublitz Sampler 2:

Project Information

Project Name: SWMU 118 PFAS Assessment
Street Kennedy Space Center
City Merritt Island State FL
Project # NS1010.01.06
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	HOPH	CONH	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LCQSM537DODFL-24 analytes + GenX	LAB USE ONLY
1	S118-SW0005-000.0-20220623	6/23/22	1020	JB	GW	2		X								X	
2	S118-SW0006-000.0-20220623	6/23/22	1033	JB	GW	2		X								X	
3	S118-FD-20220623-01	6/23/22	1033	JB	GW	2		X								X	
4	S118-SW0007-000.0-20220623	6/23/22	1044	JB	GW	2		X								X	
5	S118-EB-20220623-01	6/23/22	1055	JB	WW	2		X								X	
6	S118-FB-20220623-01	6/23/22	1100	JB	WW	2		X								X	

INITIAL ASSESSMENT

LABEL VERIFICATION

Turnaround Time (Business days)

X 10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
vailable VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
	6/23/22 1430	2	6/23/22 1430	3 6/23/22 15:50	6/23/22 1550
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS COC_20220623 Rev 031318

FA96817: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96817 **Client:** HGL **Project:** SWMU 118 PFAS ASSESSMENT

Date / Time Received: 6/23/2022 3:50:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 6/23/2022 3:50:00 PM Reviewer: _____ Date: _____

FA96817: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96817
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/23/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92048	EPA 537M QSM5.3 B-15						
OP92048-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	105	%	73-129
OP92048-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	116	%	72-129
OP92048-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	113	%	72-129
OP92048-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	113	%	72-130
OP92048-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	109	%	71-133
OP92048-BS	375-95-1	Perfluorononanoic acid	BSP	REC	107	%	69-130
OP92048-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	115	%	71-129
OP92048-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	108	%	69-133
OP92048-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP92048-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	91	%	65-144
OP92048-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	114	%	71-132
OP92048-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	112	%	72-130
OP92048-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP92048-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	112	%	68-131
OP92048-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	117	%	69-134
OP92048-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	114	%	65-140
OP92048-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	114	%	69-127
OP92048-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	102	%	53-142
OP92048-BS	754-91-6	PFOSA	BSP	REC	110	%	67-137
OP92048-BS	2355-31-9	MeFOSAA	BSP	REC	111	%	65-136
OP92048-BS	2991-50-6	EtFOSAA	BSP	REC	121	%	61-135
OP92048-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	116	%	63-143
OP92048-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	110	%	64-140
OP92048-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	108	%	67-138
OP92048-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	106	%	73-129
OP92048-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	116	%	72-129
OP92048-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	114	%	72-129
OP92048-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	114	%	72-130
OP92048-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	114	%	71-133
OP92048-MS*	375-95-1	Perfluorononanoic acid	MS	REC	112	%	69-130
OP92048-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	121	%	71-129
OP92048-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	113	%	69-133
OP92048-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	111	%	72-134
OP92048-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	111	%	65-144
OP92048-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	119	%	71-132
OP92048-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	111	%	72-130
OP92048-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	108	%	71-127
OP92048-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	113	%	68-131
OP92048-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	106	%	69-134
OP92048-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	119	%	65-140
OP92048-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	113	%	69-127
OP92048-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	113	%	53-142

* Sample used for QC is not from job FA96817

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96817
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/23/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92048-MS*	754-91-6	PFOSA	MS	REC	117	%	67-137
OP92048-MS*	2355-31-9	MeFOSAA	MS	REC	121	%	65-136
OP92048-MS*	2991-50-6	EtFOSAA	MS	REC	128	%	61-135
OP92048-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	117	%	63-143
OP92048-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	114	%	64-140
OP92048-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	113	%	67-138
OP92048-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP92048-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	5	%	30
OP92048-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	109	%	72-129
OP92048-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	6	%	30
OP92048-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	108	%	72-129
OP92048-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	6	%	30
OP92048-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	104	%	72-130
OP92048-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	9	%	30
OP92048-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	104	%	71-133
OP92048-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	9	%	30
OP92048-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	102	%	69-130
OP92048-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	9	%	30
OP92048-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	109	%	71-129
OP92048-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	10	%	30
OP92048-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	102	%	69-133
OP92048-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	10	%	30
OP92048-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	101	%	72-134
OP92048-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	10	%	30
OP92048-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	99	%	65-144
OP92048-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	11	%	30
OP92048-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	107	%	71-132
OP92048-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	11	%	30
OP92048-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	105	%	72-130
OP92048-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	6	%	30
OP92048-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	102	%	71-127
OP92048-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	6	%	30
OP92048-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	107	%	68-131
OP92048-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	6	%	30
OP92048-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	91	%	69-134
OP92048-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	15	%	30
OP92048-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	115	%	65-140
OP92048-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	4	%	30
OP92048-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	108	%	69-127
OP92048-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	5	%	30
OP92048-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	101	%	53-142
OP92048-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	11	%	30
OP92048-MSD*	754-91-6	PFOSA	MSD	REC	107	%	67-137
OP92048-MSD*	754-91-6	PFOSA	MSD	RPD	9	%	30
OP92048-MSD*	2355-31-9	MeFOSAA	MSD	REC	106	%	65-136

* Sample used for QC is not from job FA96817

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96817
Account: Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment
Collected: 06/23/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP92048-MSD*	2355-31-9	MeFOSAA	MSD	RPD	13	%	30
OP92048-MSD*	2991-50-6	EtFOSAA	MSD	REC	115	%	61-135
OP92048-MSD*	2991-50-6	EtFOSAA	MSD	RPD	10	%	30
OP92048-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	111	%	63-143
OP92048-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30
OP92048-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	105	%	64-140
OP92048-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	8	%	30
OP92048-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	106	%	67-138
OP92048-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	7	%	30
OP92188	EPA 537M QSM5.3 B-15						
OP92188-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	90	%	73-129
OP92188-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	94	%	72-129
OP92188-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP92188-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	91	%	72-130
OP92188-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	92	%	71-133
OP92188-BS	375-95-1	Perfluorononanoic acid	BSP	REC	91	%	69-130
OP92188-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	92	%	71-129
OP92188-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	91	%	69-133
OP92188-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	90	%	72-134
OP92188-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	79	%	65-144
OP92188-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	92	%	71-132
OP92188-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	90	%	72-130
OP92188-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	90	%	71-127
OP92188-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	90	%	68-131
OP92188-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	95	%	69-134
OP92188-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	94	%	65-140
OP92188-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	94	%	69-127
OP92188-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	85	%	53-142
OP92188-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP92188-BS	2355-31-9	MeFOSAA	BSP	REC	94	%	65-136
OP92188-BS	2991-50-6	EtFOSAA	BSP	REC	98	%	61-135
OP92188-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	92	%	63-143
OP92188-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	92	%	64-140
OP92188-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	89	%	67-138

* Sample used for QC is not from job FA96817

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1331-IBLK	2Q95240.D	1	07/19/22	JB	n/a	n/a	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	99%	50-150%

Instrument Blank

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1331-IBLK	2Q95240.D	1	07/19/22	JB	n/a	n/a	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	107%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	96%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	92%	50-150%

Instrument Blank

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1332-IBLK	2Q95300.D	1	07/20/22	JB	n/a	n/a	S2Q1332

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	Compound	Result	RL	MDL	Units	Q
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	97%	50-150%
	d3-MeFOSA	98%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	93%	50-150%

Instrument Blank

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1336-IBLK	2Q95630.D	1	07/24/22	JB	n/a	n/a	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	109%	50-150%

Instrument Blank

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1336-IBLK	2Q95630.D	1	07/24/22	JB	n/a	n/a	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	120%	50-150%
	13C2-PFDoDA	117%	50-150%
	13C2-PFTeDA	105%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	119%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	109%	50-150%
	13C3-HFPO-DA	82%	50-150%

Method Blank Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-MB	2Q95267.D	1	07/19/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	94%	50-150%

Method Blank Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-MB	2Q95267.D	1	07/19/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	92%	50-150%
	13C2-PFTeDA	65%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	72%	50-150%

Method Blank Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92188-MB	2Q95675.D	1	07/25/22	JB	07/21/22	OP92188	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%

Method Blank Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92188-MB	2Q95675.D	1	07/25/22	JB	07/21/22	OP92188	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	86%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	95%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	76%	50-150%

Blank Spike Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-BS	2Q95266.D	1	07/19/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0837	105	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0929	116	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0907	113	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0900	113	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0872	109	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0855	107	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0921	115	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0862	108	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0842	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0724	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0909	114	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0899	112	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0886	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0892	112	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0935	117	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0915	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0913	114	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0816	102	53-142
754-91-6	PFOSA	0.08	0.0880	110	67-137
2355-31-9	MeFOSAA	0.08	0.0886	111	65-136
2991-50-6	EtFOSAA	0.08	0.0968	121	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0924	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0883	110	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0866	108	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.104	130	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	84%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	87%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	87%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-BS	2Q95266.D	1	07/19/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	56%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	84%	50-150%
	13C8-PFOS	86%	50-150%
	13C8-FOSA	69%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	68%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92188-BS	2Q95674.D	1	07/25/22	JB	07/21/22	OP92188	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0717	90	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0749	94	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0744	93	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0724	91	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0732	92	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0729	91	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0735	92	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0725	91	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0721	90	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0634	79	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0736	92	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0716	90	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0718	90	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0717	90	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0762	95	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0750	94	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0752	94	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0678	85	53-142
754-91-6	PFOSA	0.08	0.0765	96	67-137
2355-31-9	MeFOSAA	0.08	0.0748	94	65-136
2991-50-6	EtFOSAA	0.08	0.0784	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0736	92	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0738	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0714	89	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0816	102	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	94%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92188-BS	2Q95674.D	1	07/25/22	JB	07/21/22	OP92188	S2Q1336

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-5, FA96817-6

CAS No.	ID Standard Recoveries	BSP	Limits
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	78%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	75%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-MS	2Q95278.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331
OP92048-MSD	2Q95279.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331
FA96827-2	2Q95277.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	Compound	FA96827-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.169	106	0.16	0.161	101	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.16	0.186	116	0.16	0.175	109	6	72-129/30
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.182	114	0.16	0.172	108	6	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.183	114	0.16	0.167	104	9	72-130/30
335-67-1	Perfluorooctanoic acid	0.0080	U	0.16	0.183	114	0.16	0.167	104	9	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.179	112	0.16	0.163	102	9	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.193	121	0.16	0.174	109	10	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.180	113	0.16	0.163	102	10	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.178	111	0.16	0.161	101	10	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.177	111	0.16	0.158	99	11	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.190	119	0.16	0.171	107	11	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.178	111	0.16	0.168	105	6	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.173	108	0.16	0.163	102	6	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.16	0.181	113	0.16	0.171	107	6	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.170	106	0.16	0.146	91	15	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.16	0.191	119	0.16	0.184	115	4	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.180	113	0.16	0.172	108	5	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.180	113	0.16	0.162	101	11	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.187	117	0.16	0.171	107	9	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.194	121	0.16	0.170	106	13	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.204	128	0.16	0.184	115	10	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.187	117	0.16	0.177	111	5	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.182	114	0.16	0.168	105	8	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.181	113	0.16	0.169	106	7	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.220	138	0.16	0.194	121	13	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96827-2	Limits
	13C4-PFBA	81%	82%	78%	50-150%
	13C5-PFPeA	81%	82%	78%	50-150%
	13C5-PFHxA	81%	82%	79%	50-150%
	13C4-PFHpA	77%	80%	77%	50-150%
	13C8-PFOA	74%	77%	71%	50-150%
	13C9-PFNA	66%	63%	60%	50-150%
	13C6-PFDA	60%	57%	55%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96817
Account: HGLFLMI Hydrogeologic, Inc.
Project: NASA TQN 21- SLF PFAS Assessment

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP92048-MS	2Q95278.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331
OP92048-MSD	2Q95279.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331
FA96827-2	2Q95277.D	1	07/20/22	JB	07/12/22	OP92048	S2Q1331

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96817-1, FA96817-2, FA96817-3, FA96817-4

CAS No.	ID Standard Recoveries	MS	MSD	FA96827-2	Limits
	13C7-PFUnDA	57%	59%	57%	50-150%
	13C2-PFDoDA	55%	59%	59%	50-150%
	13C2-PFTeDA	49%* [a]	51%	51%	50-150%
	13C3-PFBS	83%	83%	77%	50-150%
	13C3-PFHxS	73%	73%	70%	50-150%
	13C8-PFOS	61%	57%	57%	50-150%
	13C8-FOSA	49%* [a]	47%* [a]		50-150%
	d3-MeFOSAA	60%	63%	59%	50-150%
	d5-EtFOSAA	55%	60%	58%	50-150%
	13C2-4:2FTS	82%	81%	74%	50-150%
	13C2-6:2FTS	73%	76%	66%	50-150%
	13C2-8:2FTS	67%	59%	54%	50-150%
	13C3-HFPO-DA			63%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.